CEO Origin and Performance Consequences: Evidence from New Zealand Firms

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Abstract

This thesis examines the relationship between Chief Executive Officer (CEO) origin and performance consequences in a New Zealand (NZ) setting. The NZ setting is unique because previous research on this topic is from the United States (US) and in one instance the United Kingdom (UK); and the NZ setting is intriguing because it has four important institutional differences: NZ directors hire outsiders much more frequently than their US and UK counterparts; NZ has no discernible trend in the frequency of outsider appointments over time, whereas the US has a marked upward trend; average CEO tenure in NZ is much shorter than that observed in the US or globally; and CEO succession occurs in relatively small firms. These four differences suggest that the NZ CEO market has some unique dynamics and perhaps unique performance consequences. This thesis fills a gap in our knowledge of executive and director practice in NZ and contributes to the CEO origin debate by analysing a new setting.

Using a hand collected sample of 162 CEO appointments from NZ firms between 1991 and 2008, I find some significant performance differences between insider and outsider CEOs. Outsiders elicit a higher abnormal return around the appointment announcement: the 1-day and the 3-day differentials are approximately 1.2% and 1.7% respectively. In contrast, insiders create more shareholder wealth during their first three years in charge: insiders increase the appointing firm's market-to-book ratio by approximately 27 percentage points more than outsiders. I also discover that insiders are around 37 percentage points more likely to last at least three years in the job. The main difference between these findings and those from the US and UK is that insiders easily outperform outsiders in the medium term. Also, I document an intuitive finding for grey insiders: grey insiders by definition possess a blend of insider and outsider attributes and perform between insiders and outsiders on all three performance measures. These findings are robust to various controls and subsamples, and there is also some evidence that the market-to-book finding is robust to selection bias.

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1 Introduction

Selecting a Chief Executive Officer (CEO) is one of the most important decisions faced by the board of directors. This decision is important because CEOs significantly affect firm policy, firm performance, and shareholder wealth (e.g., Bennedsen, Pérez-González, & Wolfenzon, 2010, 2012; Bertrand & Schoar, 2003; Huson, Malatesta, & Parrino, 2004; Malmendier, Tate, & Yan, 2011). In making this decision, the directors must carefully evaluate the skills and abilities of the candidates, predict the future needs of the firm, and then determine who is most likely to create shareholder wealth.

One important component of the hiring decision revolves around CEO origin: does the optimal candidate come from within the firm (an insider) or from outside the firm (an outsider)? The answer to this question may not be obvious because each candidate type has different strengths. On the one hand, insiders know the firm's products, markets, and employees so can quickly and smoothly pick up the responsibilities of the CEO (Bidwell, 2011). Insiders have worked for the firm so the board knows how they performed in prior roles, how effectively they work with colleagues, and how they fit the company culture. In other words, insiders are known quantities, whereas outsiders present the board with uncertainty (Hermalin, 2005). An insider appointment also motivates other employees to work hard as they know internal promotion is possible (Chan, 1996).

On the other hand, outsiders have worked for other firms so are likely to have wider work experience, allowing them to gather more generic skills than insiders (Murphy & Zabojnik, 2006). For example, some outsiders may have been CEOs and therefore have CEO specific skills, such as deciding on strategy, communicating with the press, and obtaining capital from investors. Outsiders can also catalyse change in the firm (Helmich & Brown, 1972; Vancil, 1987; Wiersema, 1992). Outsiders can objectively evaluate the status quo, for example, because they have not worked for the appointing firm and therefore are not attached to firm policies or employees. They may also have fresh ideas and management strategies from their experience at other firms.

Several studies investigate whether directors should systematically favour one CEO origin over another. These studies compare the performance of appointed insiders and appointed outsiders, and generally measure performance along three dimensions: the abnormal return around the appointment announcement, medium term firm performance, and the likelihood of the CEO lasting at least three years in the job. These studies report mixed findings: outsiders are generally

associated with higher abnormal returns around the appointment announcement (e.g., Adams & Mansi, 2009; Dahya & McConnell, 2005; Falato & Kadyrzhanova, 2012); neither insiders nor outsiders consistently dominate over the medium term (e.g., Ang & Nagel, 2009; Falato & Kadyrzhanova, 2012; Huson et al., 2004); and insiders are sometimes more likely to last three years in the job (e.g., Allgood & Farrell, 2003; Zhang, 2008). These studies all use CEO appointments from the United States (US), except Dahya and McConnell who use CEO appointments from the United Kingdom (UK).

In this thesis, I also compare the performance of insiders and outsiders. However, in contrast to previous studies, I use a hand collected sample of 162 CEO appointments from New Zealand (NZ) firms between 1991 and 2008. The NZ setting is intriguing because it has important institutional differences. Firstly, NZ directors hire outsiders much more frequently than their overseas counterparts: just over 50% of NZ CEOs are outsiders, whereas 30% of UK CEOs and between 30 and 40% of US CEOs are outsiders (Ang & Nagel, 2009; Citrin, Smith, & Speed, 2011; Dahya & McConnell, 2005; Falato, Li, & Milbourn, 2009; Kuang, Qin, & Wielhouwer, 2012). Secondly, NZ has no discernible trend in the frequency of outsider appointments over time, whereas the US has a marked upward trend (Falato et al., 2009). Thirdly, average CEO tenure in NZ is much shorter than that observed overseas: the mean (median) tenure of NZ CEOs is approximately 4.5 years (3.5 years), whereas the mean of global and the median of US CEOs is approximately 7.7 years (Falato et al., 2009; Lucier, Habbel, & Wheeler, 2007). Finally, a NZ setting allows me to study CEO successions in relatively small firms. I meet the call of Giambatista, Rowe, and Riaz (2005), who review the CEO succession literature and recommend the following for future research:

> *As to setting, we would like to see more variety in industry settings and a more inclusive approach accommodating smaller and mid-size firms. Because the traumatic effects of succession are likely to be even more pronounced in small and medium-sized firms (Levinthal, 1991), the need for knowledge of succession in these settings is even more urgent. (p. 986)*

These four differences suggest that the NZ CEO market has some unique dynamics and perhaps unique performance consequences; the findings of the US and UK studies may not generalise to NZ. This thesis fills a gap in our knowledge of executive and director practice in NZ.

This thesis also improves on previous work in two ways. First, I refine the CEO origin classification: I introduce a third origin, grey insider, for those CEOs who are not clear insiders or outsiders. Grey insiders make up 23% of this thesis's sample and include the following groups: recently hired executives, former executives, non-executive directors, and executives or non-executive directors of the major shareholder of the appointing firm. Previous studies do not explicitly mention how they classify the final three groups; instead they often state something like "insiders have been with the firm for at least a year", but do not stipulate whether "been with" refers only to current executives or also includes these groups (e.g., Agrawal, Knoeber, & Tsoulouhas, 2006; Falato & Kadyrzhanova, 2012; Huson et al., 2004). I clear up this ambiguity by classifying these groups as grey insiders. The grey insider category sharpens the distinction between insider and outsider.

Second, I use a more comprehensive and holistic criteria for comparing the performance of CEOs from different origins. Each of the US and UK studies only analyse performance along one or two dimensions, whereas this thesis uses three dimensions: (i) the share price reaction to the appointment announcement, (ii) the 3-year change in the firm's market-to-book ratio, and (iii) the likelihood of the CEO lasting at least three years. Each dimension captures performance from a different angle: (i) shows who investors expect to have a greater impact on the firm, (ii) shows who actually has a greater impact on the firm, and (iii) shows who is more likely to be a good match with the firm.

Using these performance measures, I find the following performance differences between insiders and outsiders. Outsiders elicit a higher abnormal return around the appointment announcement: the 1-day and the 3-day differentials are approximately 1.2% and 1.7% respectively. In contrast, insiders create more shareholder wealth over a three year period: insiders increase the appointing firm's market-to-book ratio by approximately 27 percentage points more than outsiders. I also find that insiders are around 37 percentage points more likely to last at least three years in the job. The main difference between these findings and those from the US and UK is that insiders easily outperform outsiders in the medium term. I also discover an intuitive finding for grey insiders: grey insiders by definition possess a blend of insider and outsider attributes and interestingly perform between insiders and outsiders on all three measures. These findings are robust to various controls and subsamples, and there is also some evidence that the market-to-book finding is robust to selection bias.

The rest of the thesis is structured as follows. In the next chapter, I review the literature on CEO origin and performance consequences. Chapter 3 describes the sample selection, the CEO origin classification, and the sample statistics. In Chapters 4 through 6, I compare the performance of insiders, grey insiders, and outsiders. Chapter 7 offers some possible explanations for the findings and contains concluding remarks.

2 Literature Review

In this chapter, I review studies that compare the performance of insiders and outsiders. I present their findings in the order of this thesis's performance measures: the abnormal return around the appointment announcement, medium term firm performance, and the likelihood of the CEO lasting at least three years in the job.

2.1 Appointment Announcement Abnormal Returns

Outsiders, on average, elicit a higher abnormal return around the appointment announcement. For example, Adams and Mansi (2009) analyse 674 CEO appointments from the US between 1973 and 2000, and find that outsiders deliver a 3-day abnormal return that is 2.3% higher than insiders, a difference which is significant at the 1% level. After controlling for other factors, the authors find that the difference shrinks to 1.4% and is significant at the 5% level.

Two more recent studies also report similar results. Dahya and McConnell (2005) study 523 CEO appointments from the UK between 1989 and 1999, and observe that outsiders generate a 2-day abnormal return that is 0.6% higher than insiders, a difference which is significant at the 1% level. After controlling for the likelihood of an outsider appointment, Dahya and McConnell discover that the difference and significance slightly diminish. Falato and Kadyrzhanova (2012) examine 1,665 CEO successions from the US financial sector between 1988 and 2007 and also find that outsiders elicit higher abnormal returns than insiders: a difference in 2-day abnormal returns of 1.8% which is significant at the 5% level.

The evidence from earlier studies is mixed. Lubatkin, Chung, Rogers, and Owers (1989) analyse 477 CEO appointments from large US firms between 1971 and 1985. After controlling for firm size and prior firm performance, the authors discover that outsiders are associated with significantly higher 2-day abnormal returns. Bonnier and Bruner (1989) and Friedman and Singh (1989) find that outsiders are associated with insignificantly higher abnormal returns. Bonnier and Bruner examine 87 top management changes from financially distressed US firms between 1969 and 1983, and Friedman and Singh examine 130 CEO changes from large US firms. Both studies control for other factors. By contrast, using 323 top management changes from US firms between 1975 and 1982, Furtado and Rozeff (1987) find that insiders elicit higher abnormal returns: the difference in 2-day abnormal returns is 1.73% and is significant at the 1% level. This finding, however, only applies to

their large firm subsample; in their small firm subsample, the difference is approximately 0% and is statistically insignificant.

2.2 Medium Term Firm Performance

Consistent with their above finding, Falato and Kadyrzhanova (2012) discover that outsiders also perform best over the medium term. They use a four-factor market model to calculate 3-year abnormal returns, and report the following findings: insiders have an implied 1-year abnormal return of 4.4% which is not statistically significant, while outsiders have an implied 1-year abnormal return of 8.0% which is statistically significant at the 5% level. The authors, however, do not mention whether the difference is statistically significant. Falato and Kadyrzhanova also analyse 3-year changes in the firm's operating performance and Tobin's q. They control for the firm's industry and prior performance, and conclude that the performance gap between insiders and outsiders ranges "from 25 to 50 percent of the pre-transition unadjusted level of performance" (p.17). These findings are statistically significant at the 5% or 10% levels. As a robustness check, the authors use a nearest-neighbour matching estimator to control for selection issues; they continue to find a large performance gap favouring outsiders.

Lauterbach, Vu, and Weisberg (1999) study 165 top management successions in US firms between 1989 and 1991 and report similar findings. Using a market model to calculate 2-year abnormal returns, they discover that the returns associated with outsiders are 24 percentage points higher than those associated with insiders, a difference which is significant at the 5% level. The authors also control for several other factors using a cross-sectional regression, and find that the difference widens to 38 percentage points and becomes significant at the 1% level.

Huson et al. (2004) also report some evidence in favour of outsiders. They scrutinise 1,344 CEO successions from large US public firms between 1971 and 1994, and find that outsiders are associated with higher mean and median 3-year changes in operating return on assets (OROA). These bivariate differences are significant at the 1% level when unadjusted and industry-adjusted OROA are used as performance measures, but the significance diminishes when control-group-adjusted OROA is used. The control groups consist of firms from the same industry that have similar prior performance. The authors also control for several other factors using a cross-sectional regression, and find no significant performance differences between insiders and outsiders.

In contrast, Ang and Nagel (2009) document some evidence in favour of insiders. They analyse over 3,000 CEO appointments from large US companies between 1986 and 2005, and conclude that insiders, on average, deliver at least 25% greater accounting performance. However, they find no difference when Tobin's q and stock returns are used as performance measures. Ang and Nagel control for other factors via regression techniques and control for selection issues via a treatment effects model and matching methods. Using matching methods, the authors also find that insiders are associated with less chance of poor performance and with equal chance of highest performance. Ang and Nagel then compare the performance of insiders and outsiders in 10 hiring circumstances where conventional wisdom suggests that outsiders should excel. These circumstances include turning the firm around, restructuring the firm, managing very large firms, extracting merger premiums, and cases involving firms with potentially inferior insider candidates. Surprisingly, they find that insiders either excel or deliver comparable performance in these circumstances.

Khurana (2002a) also provides support for insiders. After analysing the hiring and firing of CEOs at 850 of America's largest companies between 1978 and 1999, and after conducting extensive interviews with CEOs, corporate board members, and consultants at executive search firms, Khurana argues that directors systematically overestimate the ability of outsider candidates. Specifically, he argues that directors are irrationally attracted to "superstars" - outsider candidates who are charismatic and come from high performing and high stature companies. The irrational quest for superstars causes directors to overlook superior insider candidates, whose experience and abilities are better suited to the appointing firm. The mismatch between the superstar's skills and the firm's needs results in poor firm performance. Khurana (2002b) concludes that "[t]ime and again over the past 20 years, corporate boards have seen the superstars they had hoped would be saviors turn into black holes that sucked the energy and purpose out of their organizations" (p. 66).

2.3 Lasting at Least Three Years in the Job

The evidence on balance suggests that insiders are more likely to last at least three years in the job. For example, Zhang (2008) analyses 204 CEO successions from US non-diversified manufacturing firms, and finds that outsiders have a significantly higher probability of being dismissed within their first three years. She uses discrete-time event history models and controls for several other factors including alternative reasons for leaving the firm. Zhang concludes that directors are more likely to make mistakes when appointing outsiders as they know less about outsider candidates than insider candidates.

Bidwell (2011) supports the conclusions of Zhang (2008). Bidwell studies employee appointments from a US investment banking firm between 2006 and 2009 and, after controlling for several job and employee specific factors, documents that outsiders have significantly higher voluntary and involuntary departure rates in their first two years. Specifically, he uses Cox event history models and finds that outside hires have a 61% higher hazard rate of involuntary exit than simple inside promotions, and a 21% higher hazard rate of voluntary exit. Bidwell offers two explanations for these findings: outsiders perform significantly worse in their early years which results in more exits; and outsiders and employers are less acquainted which results in more bad matches and hence exits.

Allgood and Farrell (2003) provide limited support for insiders. They examine 392 CEO successions from US firms between 1981 and 1993, and report that 81% of insiders and 70% of outsiders last at least three years in the job. The authors, however, do not mention whether the difference is statistically significant. Allgood and Farrell also estimate multinomial logit regressions that control for firm size, firm prior performance, firm current performance, previous CEO departure variables, and current CEO age. The authors find no significant difference in the likelihood of insiders and outsiders lasting at least three years.

2.4 Summary

In summary, the empirical evidence on CEO origin and performance consequences is mixed: outsiders are generally associated with higher abnormal returns around the appointment announcement; neither insiders nor outsiders consistently dominate over the medium term; and insiders are sometimes more likely to last three years in the job. These findings are exclusively from the US and in one instance the UK.

3 Sample Selection and CEO Origin

In this chapter, I describe the sample selection, the CEO origin classification, and the sample statistics.

3.1 Sample Selection

When a company appoints a CEO it informs investors via a New Zealand Exchange (NZX) announcement. I search for these appointment announcements in the NZX i-Search database, a database that contains *all* announcements from NZX listed firms over the last 23 years.[1] To find CEO appointment announcements within this database, I use the advanced search function, inputting the following search parameters:

- Announcement types. NZX announcements are categorised into types based on their content. After experimenting with different announcement types, I discover that the appointment announcements are generally 'office', 'director', or 'general' types.
- Keywords. Several different keywords are used: 'appointment', 'CEO', 'chief executive officer', and 'managing director'. The database searches for these keywords in the announcement title and in the announcement itself.
- Time period. The announcement must be released between 30 August 1991 and 31 December 2008. This period maximises sample size whilst adhering to the data constraints: 30 August 1991 is the earliest date in the database, and 31 December 2008 is the latest date (as at the time of searching) that allows the 3-year performance measures to be observed.

I run 12 different searches in total; I try all three announcement types for each keyword - an announcement type and a keyword are both needed to avoid being overwhelmed by irrelevant search results.[2] Using the above parameters, a search returns approximately between 90 and 1200

[1] With a subscription, the database is available from https://www.i-search.nzx.com. Instead of searching for appointment announcements, I could have identified today's CEOs of NZX firms and then traced back their appointments. However, this method is more time intensive and would not include non-current CEOs or CEOs of firms that have subsequently delisted.

[2] A few additional appointments are found with the following strategy. If a CEO leaves the company and the subsequent CEO appointment does not appear in the 12 different searches, then I read through the company's announcements until I find the subsequent appointment, which is usually buried within an earnings announcement.

results. Approximately 10% of these results actually contain a CEO appointment announcement; however, the same appointment announcement often appears in multiple searches.

As I read through the search results, I only keep permanent CEO appointments. Interim appointments are discarded because their medium term performance consequences cannot be measured. The appointment announcement usually mentions whether the appointment is permanent or interim, and when it is unclear, I read the firm's annual report for the financial year of the appointment.[3]

After the above searching, I have an initial sample of 213 CEO appointments. Each of these appointments must then satisfy five conditions:

(i) The appointed CEO must be the sole top executive. In other words, an Executive Chairman, Managing Director, or Joint CEO cannot also be present at the appointing firm.[4] This condition ensures that the CEO's influence on the firm is significant and can be isolated. I use annual reports to check for unconventional management structures. This condition removes 10 CEO appointments from the sample.

(ii) The appointment must involve a new CEO. In other words, the appointment cannot be a mere formality with the incumbent CEO being re-appointed to his existing firm - for example, the CEO of the acquiring firm in a merger being appointed to CEO of the merged firm. This condition ensures that both insiders and outsiders are new to the appointing firm's CEO position and hence compete on a level playing field. The appointment announcement usually states whether the appointment involves a new CEO or an incumbent, and when it is unclear, I read the firm's annual report for the financial year of the appointment. This condition removes three CEO appointments from the sample.

(iii) The appointing firm must be listed on the NZX Main Board or the NZX Alternative Market (NZAX) at the time of the announcement. Put differently, the firm's equity (instead of only its debt) needs to be publically traded. This condition is necessary as two of the CEO

[3] Annual reports are available from the NZX Company Research database or the University of Canterbury Library. With a subscription, the NZX Company Research database is available from http://companyresearch.nzx.com. The NZX Company Research database does not have annual reports for eight firms so I borrow them from the University of Canterbury Library.

[4] One appointment violates this condition. Despite an Executive Chairman being present, I include the CEO appointment because the annual reports imply that the CEO is actually running the firm. Also, one appointment is excluded as the board does not select the CEO; a property trust sold their management rights to a third party, who allocated an employee to manage the trust.

performance measures require share prices. When it is not obvious whether the company has listed equity, I check the Listed Securities section within the Profile Search Tool function of the NZX Company Research database. This condition removes six CEO appointments from the sample.

(iv) The appointing firm must be domiciled in NZ at the time of the appointment announcement and for the following three years. This condition ensures that country-specific factors will not bias performance comparisons. I check the firm's domiciliation using registered company addresses at the back of annual reports. This condition removes 27 CEO appointments from the sample.

(v) There must be sufficient information to classify the origin of the appointed CEO. I discuss this classification in the next section. This condition removes five CEO appointments from the sample.

After the above filtering, I have a final sample of 162 CEO appointments.

3.2 CEO Origin Classification

I classify each appointed CEO as an insider, grey insider, or outsider:

- Immediately prior to the appointment, insiders are executives of the appointing firm and have worked at the firm for at least a year. The 1-year requirement is common in the finance literature (e.g., Agrawal et al., 2006; Ang & Nagel, 2009; Cazier & McInnis, 2010; Falato & Kadyrzhanova, 2012; Huson et al., 2004). The rationale is that after a year's experience an executive is more like an insider than an outsider.
- Grey insiders are any of the following:
    (a) Immediately prior to the appointment, executives of the appointing firm who have worked at the firm for less than a year (i.e., recently hired executives).[5] Previous studies classify these executives as outsiders (e.g., Agrawal et al., 2006; Ang & Nagel, 2009; Cazier & McInnis, 2010; Falato & Kadyrzhanova, 2012; Huson et al., 2004). I deem it more appropriate, however, to classify them as grey insiders as they have spent some time inside the firm.
    (b) Immediately prior to the appointment, executives of another firm who have worked at the appointing firm at some stage during the five years leading up to the appointment (i.e., former executives). I use a 5-year cut-off so that I can accurately

[5] I also classify two consultants (instead of executives) as grey insiders. Both consultants worked for the appointing firm for several months prior to becoming CEO.

classify these executives: an executive's early work history is often unavailable. Also, a 5-year cut-off ensures a significant link between the former executive and the appointing firm.

(c) Non-executive directors of the appointing firm who served at some stage during the five years leading up to the appointment.

(d) Executives or non-executive directors of a major shareholder of the appointing firm.[6] These candidates must have held these positions immediately prior to the appointment, so that they have a significant link with the appointing firm. A major shareholder is defined as owning at least 40% of the appointing firm at the time of the appointment announcement.

The grey insider classification is unique to this thesis. Previous studies do not explicitly mention how they classify groups (b) through (d); instead they often state something like "insiders have been with the firm for at least a year", but do not stipulate whether "been with" refers only to current executives or also includes groups (b) through (d) (e.g., Agrawal et al., 2006; Falato & Kadyrzhanova, 2012; Huson et al., 2004). I clear up this ambiguity by classifying these groups as grey insiders. Grey insiders are not clear insiders or outsiders; they are more connected to the firm than outsiders, but not as intimately as insiders; they possess a blend of insider and outsider attributes. A grey insider category sharpens the distinction between insider and outsider.

- Outsiders make up the rest of the sample: they have no obvious and/or recent connection with the appointing firm.

I use several information sources to classify the appointed CEOs. In about 50% of cases, the NZX appointment announcement contains sufficient information. Such announcements are usually from the 2000s and provide detailed background information on the appointed CEO (e.g., firm tenure, previous employers, and other connections to the firm). In approximately 40% of cases, I obtain the necessary information from the firm's annual report covering the year of the appointment: annual reports often contain a profile of the appointed CEO or a discussion about the appointment. Annual report information also allows me to confirm that the appointed CEO's previous firm is not a major shareholder: the breakdown of shareholders is required information in NZ annual reports. In the

[6] One appointed CEO violates this condition: he is classified an insider rather than a grey insider. The CEO's background is as follows: after nine years as an executive at the appointing firm, he moves to the major shareholder, but returns after only nine months to become CEO. Given the nine years with the appointing firm, he is deemed an insider rather than a grey insider.

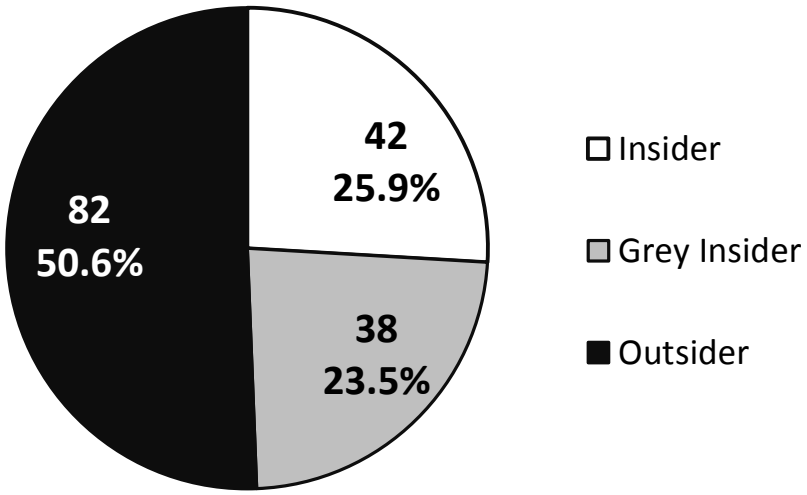
remaining 10% of appointments, I search Factiva, Google, and LinkedIn and these sources usually yield a relevant news article or career biography.[7] Finally, for all appointed CEOs that appear to be outsiders, I search the firm's directorship history on the NZ Companies Office website to check that none are past non-executive directors of the appointing firm.[8]

3.3 Sample Statistics

The 162 CEO appointments come from 102 different firms: 61 firms have 1 CEO appointment, 28 have 2, 9 have 3, 3 have 4, and 1 has 6. At the time of their respective appointment announcement(s), 95 of the firms are listed on the NZX Main Board and 7 on the NZX Alternative Market. There are 157 different CEOs; 5 of them have been appointed to 2 firms.

Figure 3.1 shows the 162 appointed CEOs by origin: 42 (26%) are insiders, 38 (23%) are grey insiders, and 82 (51%) are outsiders. Outsiders dominate the sample and are more common in NZ than overseas. For example, over a comparable sample period, 30% of UK CEOs and between 30 and 40% of US CEOs are outsiders (Ang & Nagel, 2009; Citrin et al., 2011; Dahya & McConnell, 2005; Falato et al., 2009; Kuang et al., 2012). Furthermore, these overseas proportions are inflated as their authors classify some grey insiders as outsiders.

Figure 3.1: Appointments by CEO Origin



[7] With a subscription, Factiva is available from www.dowjones.com/factiva/. With a free membership, LinkedIn is available from http://nz.linkedin.com/.

[8] The NZ Companies Office website is http://www.business.govt.nz/companies.

Even though grey insiders are unique to this thesis, there is some evidence that they are more popular in NZ than abroad. The two closest studies, Citrin et al. (2011) and Citrin and Ogden (2010), analyse three additional CEO types: insider-outsiders who are brought into the company as second in charge and are then promoted to CEO within 18 months; former executives who spent time away from the firm and returned to become CEO; and non-executive directors who are appointed CEO. The two studies examine CEO appointments between 2004 and 2008 in the UK and US respectively and find that these three additional CEO types make up 10% and 13% of their respective samples. These three additional CEO types are similar to the grey insider groups (a), (b), and (c), which together make up 16% of this thesis's sample. This comparison is rough, however, because the overseas studies use a different sample period and use slightly different CEO classification definitions.

Figure 3.2 shows the breakdown of grey insiders into groups (a) through to (d): 18% of grey insiders are recently hired executives, 5% are former executives, 18% are non-executive directors, 34% are from the major shareholder, and 24% have multiple connections (e.g., a former executive who is also a non-executive director).

Figure 3.2: Breakdown of Grey Insiders

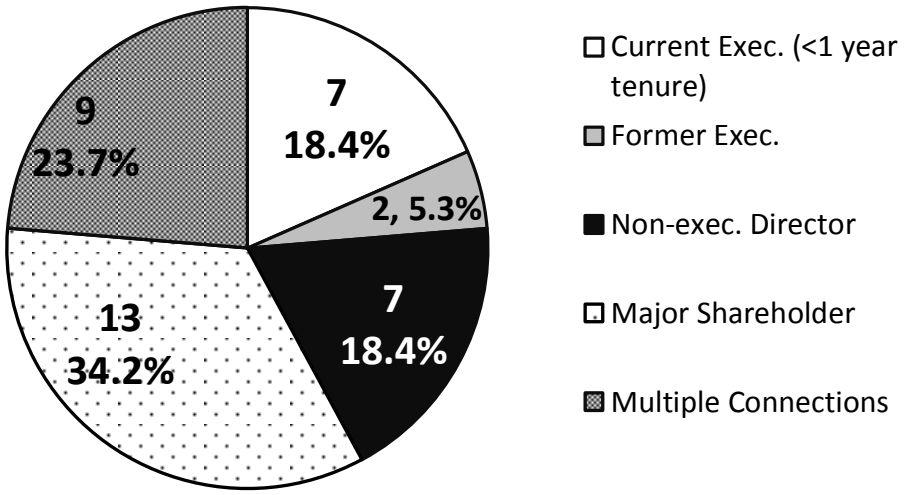


Figure 3.3 shows the variation of CEO appointments across time.[9] The appointments average nine per year, but are more common in the later part of the sample period - 54% of the appointments occur in the last six years. This increased appointment frequency may be driven by three factors.

[9] Figure 3.3 uses the appointment announcement date rather than the CEO's first day on the job.

First, over a comparable sample period, average CEO tenure has significantly decreased in the US (Kaplan & Minton, 2012). If this trend is also present in NZ, then it would contribute to more CEO appointments in recent years. Second, I suspect that the total number of firms listed on the NZX Mainboard and NZX Alternative Market has increased over time, which would lead to more CEO appointments.[10] Third, the sample selection may be biased, for some unknown reason, towards finding appointments in recent years.

Figure 3.3: Appointments across Time

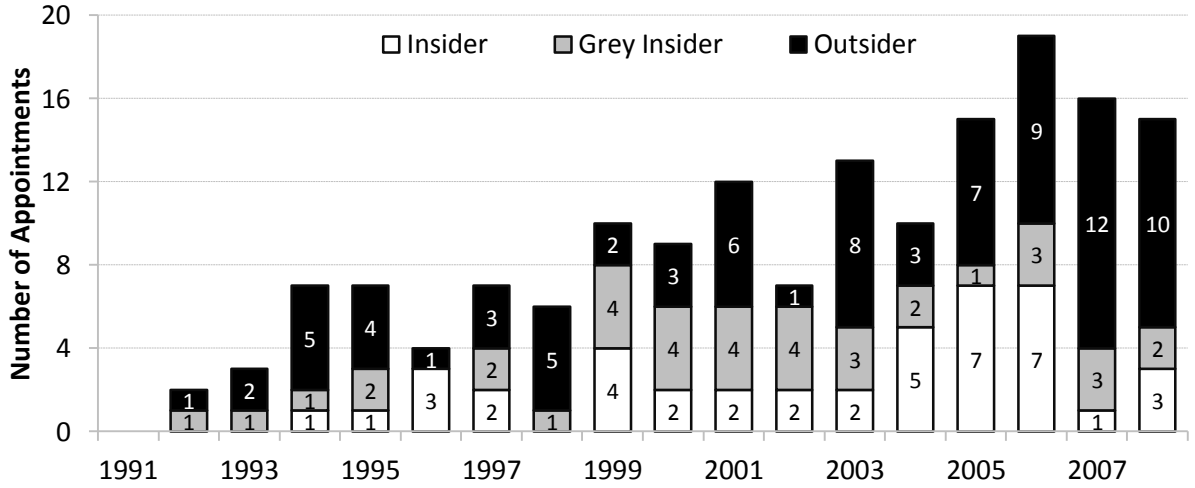
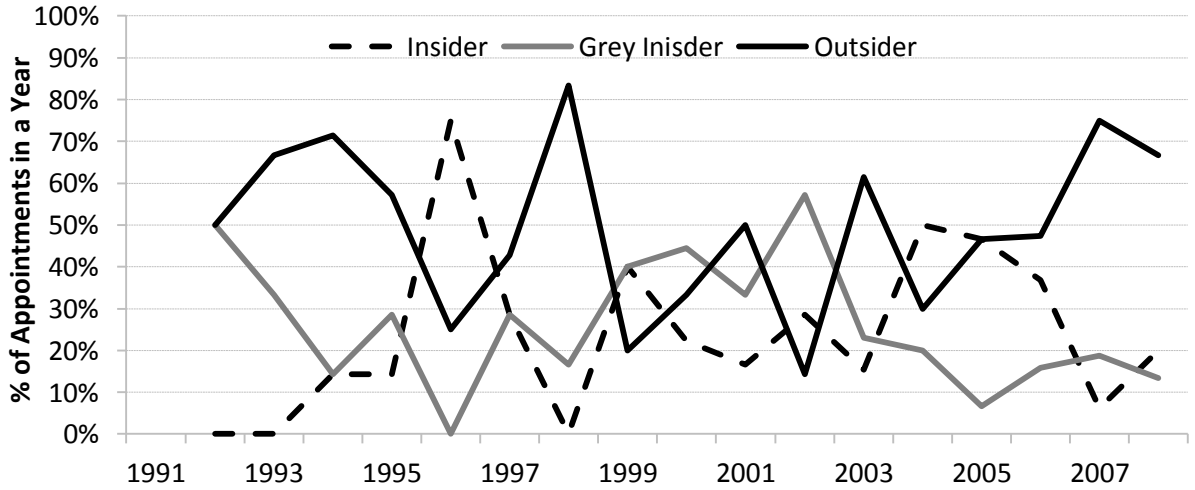


Figure 3.4: CEO Origin across Time



[10] Figures to support this claim are not readily available. The NZX could provide such figures, but at a cost of $500 or more.

Figures 3.3 and 3.4 show the variation of CEO origin across time. As a proportion of appointments in a year, none of the CEO origins have a discernible pattern: insiders dominate in 1996, but since then they average only 26% of appointments; grey insiders average 31% of appointments between 1992 and 2002, but since then have become less common; and outsiders dominate the early 1990s, 1998, and the late 2000s. A lack of a trend is in contrast to US data, which has seen the popularity of outsiders increase over a comparable sample period (e.g., Falato et al., 2009). Table 3.1 provides a more detailed breakdown of the data used in Figures 3.3 and 3.4.

Table 3.1: Appointments across Time

Table 3.1 shows the distribution of the CEO appointments over time. The table uses the year of the appointment announcement rather than the year of the CEO's first day on the job. Each CEO appointment is permanent and needs to satisfy five conditions to be included in the sample (see section 3.1). Each appointment is classified as an insider, grey insider, or outsider (see section 3.2).

	Number of Appointments				% of Appointments in a Year		
Year	**Insider**	**Grey Insider**	**Outsider**	**Total**	**Insider %**	**Grey Insider %**	**Outsider %**
1991	0	0	0	0	-	-	-
1992	0	1	1	2	0%	50%	50%
1993	0	1	2	3	0%	33%	67%
1994	1	1	5	7	14%	14%	71%
1995	1	2	4	7	14%	29%	57%
1996	3	0	1	4	75%	0%	25%
1997	2	2	3	7	29%	29%	43%
1998	0	1	5	6	0%	17%	83%
1999	4	4	2	10	40%	40%	20%
2000	2	4	3	9	22%	44%	33%
2001	2	4	6	12	17%	33%	50%
2002	2	4	1	7	29%	57%	14%
2003	2	3	8	13	15%	23%	62%
2004	5	2	3	10	50%	20%	30%
2005	7	1	7	15	47%	7%	47%
2006	7	3	9	19	37%	16%	47%
2007	1	3	12	16	6%	19%	75%
2008	3	2	10	15	20%	13%	67%
Total	**42**	**38**	**82**	**162**	**-**	**-**	**-**
Average	**2**	**2**	**5**	**9**	**24%**	**26%**	**49%**
Median	**2**	**2**	**4**	**8**	**20%**	**23%**	**50%**
Range	**7**	**4**	**12**	**19**	**75%**	**57%**	**69%**

4 Appointment Announcement Abnormal Returns

In this chapter, I compare the appointment announcement abnormal returns of insiders, grey insiders, and outsiders. Before making this comparison, I explain the rationale and measurement of these returns, and outline the sample selection for the event study.

4.1 Rationale and Measurement

The abnormal returns around the CEO's appointment announcement are the first performance measure. As documented in Chapter 2, these abnormal returns are commonly used to gauge expected CEO performance. They show who investors expect to have a greater impact on firm prospects: investors react to the appointment news by immediately buying or selling shares, pushing share prices up or down, depending on whether they expect the CEO to improve or worsen firm prospects. In other words, the abnormal returns capture the expected impact of the CEO on firm cash flows and/or on firm systematic risk - a lower cost of capital leads to a higher contemporaneous share price. If investors' expectations are correct on average, then the abnormal returns provide an unbiased estimate of the CEO's impact; the abnormal returns are measured over a short period so confounding factors are less of a concern. Even if investor expectations are wrong, the abnormal returns still show which CEO origin is generally best for shareholders in the immediate term.

To estimate expected returns, I use a trade-to-trade model. When shares do not trade daily - as is the case for some NZX listed shares - a daily return model compares nonsynchronous firm and market returns, and this biases the beta estimates (Maynes & Rumsey, 1993). A trade-to-trade model avoids this problem by comparing synchronous returns - both firm and market returns are measured over the firm's trade-to-trade period, a period that starts and finishes on the stock's two adjacent positive volume trading days. Two studies find that the trade-to-trade model is superior to other thin trading adjustments (Bartholdy, Olson, & Peare, 2007; Maynes & Rumsey, 1993), and several studies use this model (e.g., Bailey, Karolyi, & Salva, 2006; Marsden, 2000; Marsden, Poskitt, & Wang, 2008; Sponholtz, 2008).

Borrowing from Maynes and Rumsey (1993), I calculate firm *j* returns over a trade-to-trade period of $(t - n)$ to t, in which no trades occur in the $(n - 1)$ intervening days:

$$R_{j,n_t} = ln\left(\frac{P_{j,t}}{P_{j,t-n_t}}\right) \quad (4.1)$$

where $P_{j,t}$ is firm *j*'s share price (adjusted for corporate actions and dividends) on day *t*. The corresponding market returns are calculated over a matching trade-to-trade period:

$$R_{m,n_t} = ln\left(\frac{P_{m,t}}{P_{m,t-n_t}}\right) \quad (4.2)$$

where $P_{m,t}$ is the market's price (adjusted for dividends) on day *t*. Market prices are from the NZX All index, which consists of the majority of NZX Main Board companies.[11] I choose this index because it is the only broad NZ index with data back to 1991. (4.1) and (4.2) are computed over an estimation period of -210 to -11 days (where 0 is the day of the appointment announcement). Details on the collection of the firm and NZX All data are provided in Appendix A.3.

The market model and the above trade-to-trade returns form the trade-to-trade model:

$$R_{j,n_t} = \alpha_j n_t + \beta_j R_{m,n_t} + \sum_{s=0}^{n_{t-1}} \varepsilon_{j,t-s} \quad (4.3)$$

where n_t is equal to 1 plus the number of zero volume trading days between *t* and *(t - n)*. For example, the n_t for Thursday equals 3 if the stock trades on Monday and Thursday but not on Tuesday or Wednesday. The error term in (4.3) is heteroskedastic with variance equal to $n_t\sigma_j^2$, and this causes inefficient estimation of α_j and β_j. To solve this problem, (4.3) is divided by $\sqrt{n_t}$:

$$\frac{R_{j,n_t}}{\sqrt{n_t}} = \alpha_j\sqrt{n_t} + \beta_j\frac{R_{m,n_t}}{\sqrt{n_t}} + \mu_{j,t} \quad (4.4)$$

As the error term in (4.4) is homoscedastic with mean equal to 0, I estimate (4.4) using ordinary least squares (OLS), i.e., I regress $\frac{R_{j,n_t}}{\sqrt{n_t}}$ on $\frac{R_{m,n_t}}{\sqrt{n_t}}$ and $\sqrt{n_t}$, and suppress the default intercept term.

I record the regression outputs, $\hat{\alpha}_j$ and $\hat{\beta}_j$, and present their summary statistics in Table 4.1. The average firm has a beta of around 0.5 and an alpha that is close to 0. Table 4.1 also shows that the

[11] For the methodology of the NZX All index, please see p. 33 - 35 of https://www.nzx.com/files/static/Equity_Indices_Methodology_June_2012.pdf.

mean (median) number of trading days used in the estimation period is 177 (197). The minimum number of trading days is 32, which is just above the minimum sample selection cut-off of 30 days (as outlined in section 4.2 below).

Table 4.1: Summary Statistics of $\hat{\alpha}_j$ and $\hat{\beta}_j$

Table 4.1 presents the summary statistics of the trade-to-trade model parameters and of the number of trading days used in the estimation period. The trade-to-trade model uses the market model and trade-to-trade returns from an estimation period of -210 to -11 days.

	Mean	**Median**	**Stdev**	**Minimum**	**Maximum**
$\hat{\alpha}_j$	-0.0006	-0.0002	0.0020	-0.0081	0.0048
$\hat{\beta}_j$	0.56	0.50	0.65	-2.35	4.26
# of Trading Days	177	197	36	32	200

Expected returns are therefore:

$$E\left[\frac{R_{j,n_t}}{\sqrt{n}_t}\right] = \hat{\alpha}_j\sqrt{n}_t + \hat{\beta}_j \frac{R_{m,n_t}}{\sqrt{n}_t}$$

and abnormal returns are:

$$AR_{j,n_t} = \frac{R_{j,n_t}}{\sqrt{n}_t} - E\left[\frac{R_{j,n_t}}{\sqrt{n}_t}\right]$$

I report two event windows for the abnormal returns: (a) the day of the appointment announcement and (b) the three days centred on the announcement. Event window (a) uses the day 0 trade-to-trade abnormal return; event window (b) uses the 3-day cumulative abnormal return, calculated as the sum of the day -1, day 0, and day +1 trade-to-trade abnormal returns. If the stock does not trade on one or two of the days in (b) - but does trade on day 0 or day +1 - then a sum is taken where the no-trade days are treated as zero percent return days.

4.2 Sample Selection

For each event window, I start with the 162 CEO appointments and sequentially put each appointment through the following criteria:

(i) There must be a trade in the event window so that an abnormal return can be measured. Furthermore, a trade must occur on day 0 or day +1 in the 3-day window, ensuring that investors can react to the appointment announcement. This criterion is implemented by checking the stock's volume during the event windows. This criterion reduces the 1-day event window sample by 23 appointments and the 3-day by 15 appointments.

(ii) The stock must trade at least 30 times between day -210 and day -11 so that $\hat{\alpha}_j$ and $\hat{\beta}_j$ can be measured accurately. This criterion is implemented by counting the number of days with positive stock volume between day -210 and day -11. This criterion further reduces the 1-day event window sample by three appointments and the 3-day by eight appointments.

(iii) There must be no 'obvious' confounding announcements in the event window so that the appointment announcement effect can be isolated. 'Obvious' includes the following announcements: earnings results or updates, significant project updates, mergers, or movements in significant substantial shareholders. These announcements have been shown to create significant abnormal returns in their own right (McWilliams & Siegel, 1997). I check for 'obvious' confounding news in the appointment announcement and in other announcements released by the company within the respective event windows.[12] To do the latter, I input the stock's ticker and event window dates into the Announcements Search Tool section of the NZX Company Research database. This criterion further reduces the 1-day event window sample by 18 appointments and the 3-day by 21 appointments.

(iv) There must be no 'perhaps' confounding announcements in the event window so that the appointment announcement effect can be isolated. 'Perhaps' includes the following announcements: CEO departures or directorship changes. These announcements may create significant abnormal returns in their own right (Chang, Dasgupta, & Hilary, 2010). To implement this criterion, I follow the same steps as in (iii). This criterion further reduces the sample for both event windows by 39 appointments.

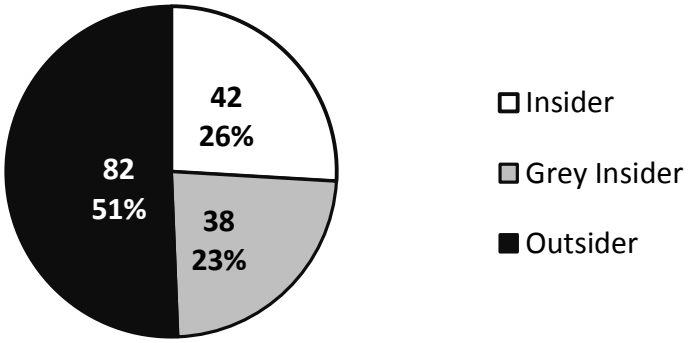
For each event window, I use three samples: sample 1 passes criteria (i) through (iii), sample 2 passes criteria (i) through (iv), and sample 3 is a common sample - it is used in the analysis of all three performance measures. Sample 3 passes criteria (i) through (iii) of this chapter, criterion (i) of Chapter 5, and criteria (i) through (iii) of Chapter 6.[13] For both event windows, sample 1 has 118

[12] I use trade-to-trade returns, so sometimes the event window's abnormal return is calculated using prices prior to the window. For these cases, I check for earlier confounding announcements.

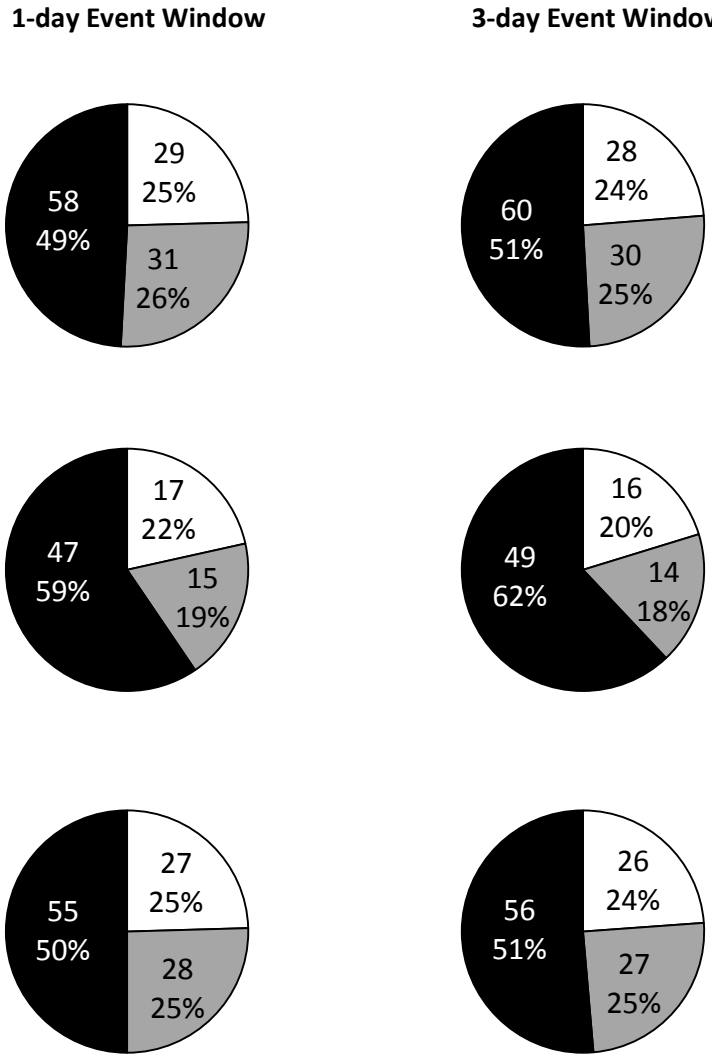
[13] I use the most lenient sample selection criteria of each chapter so that sample 3 is not too small.

Figure 4.1: Samples of the Event Study

Sample before Restrictions



Event Study Samples - first row sample 1, second row sample 2, third row sample 3



appointments and sample 2 has 79 appointments.[14] Sample 3 has 110 appointments for the 1-day window and 109 for the 3-day window.

Figure 4.1 presents the CEO origin distribution of the six samples. As a reference point, I first show the graph of the sample before any restrictions. As shown in the rest of the graphs, the CEO origin distribution does not significantly change for sample 1 or 3. There is, however, a significant change for sample 2 - outsiders increase their dominance at the expense of insiders and grey insiders.

4.3 Event Study Analysis

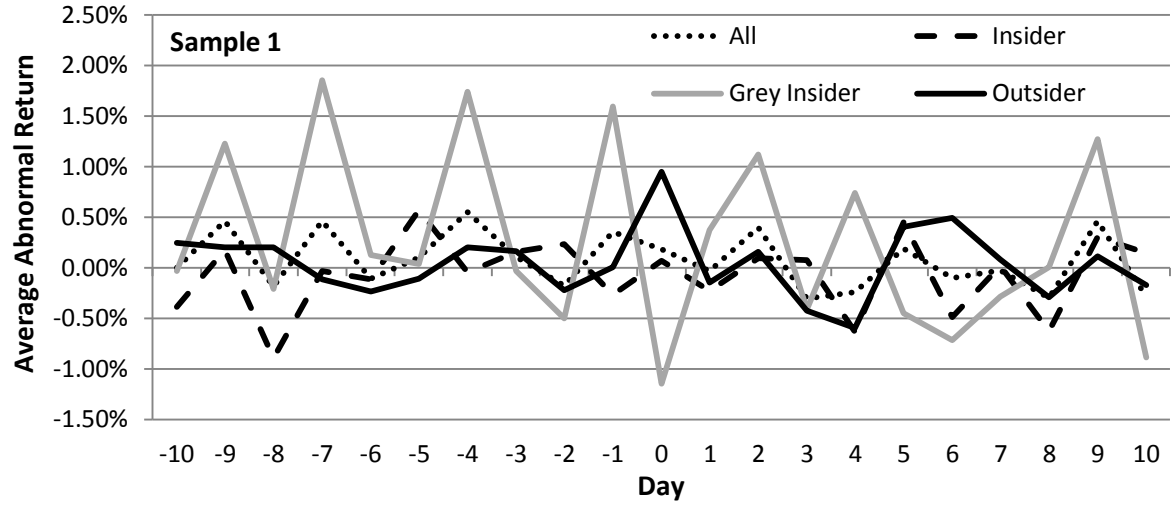
I first plot the average abnormal returns over time. The graphs of the 1-day event window samples are shown in Figure 4.2; the graphs of the 3-day samples resemble those of Figure 4.2 so are not shown. There is no obvious spike in the All series around the event windows: CEO appointments in general do not appear to elicit a significant reaction from investors. For day 0, outsiders appear to perform moderately better than insiders and significantly better than grey insiders. For the three days centred on day 0, grey insiders close the performance gap: their 3-day abnormal return appears to be on par with outsiders and better than insiders. Overall, Figure 4.2 supports the following abnormal return relation: outsiders > grey insiders >= insiders.

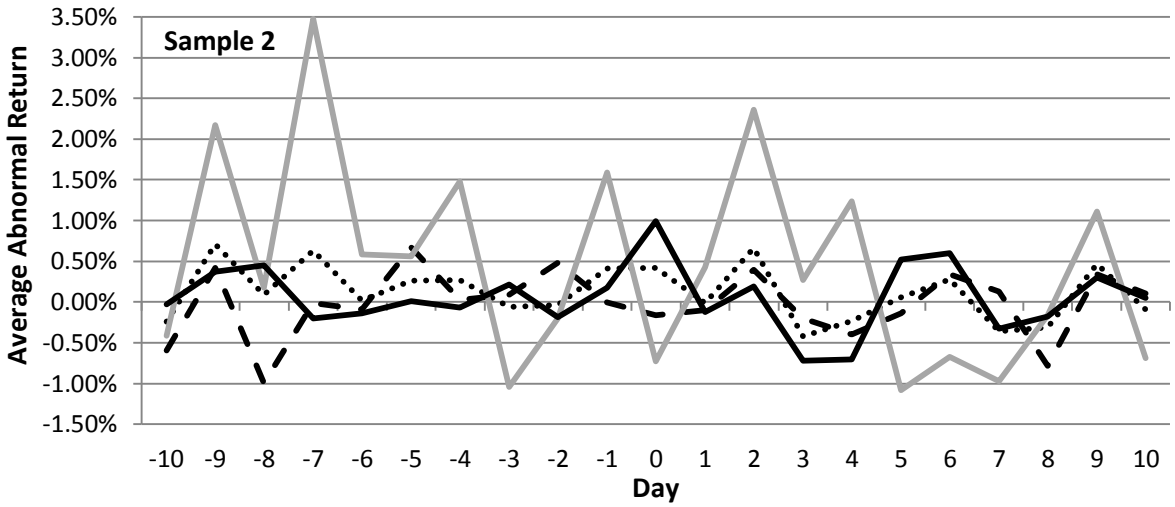
I also plot the distribution of abnormal returns. The graphs of sample 1 are shown in Figure 4.3; the graphs of sample 2 and 3 resemble those of Figure 4.3 so are not shown. For both event windows, the All distribution is symmetrical with an average abnormal return around 0%. Also for both windows, the outsider distribution appears best with the highest average and the fattest right tail. For the 3-day window, grey insiders have the highest number of outstanding performers: 13% of them are associated with 3-day abnormal returns in excess of 5%. Figure 4.3 also reveals that a significant portion of insiders are associated with abnormal returns between -1 and 1%. Overall, Figure 4.3 provides more evidence that outsiders are associated with the highest average abnormal returns.

[14] The 1-day and 3-day sample 1s are different; it is just a coincidence that they have the same number of appointments. This is also true for sample 2.

Figure 4.2: Abnormal Returns over Time

Graphs of the 1-day Event Window Samples





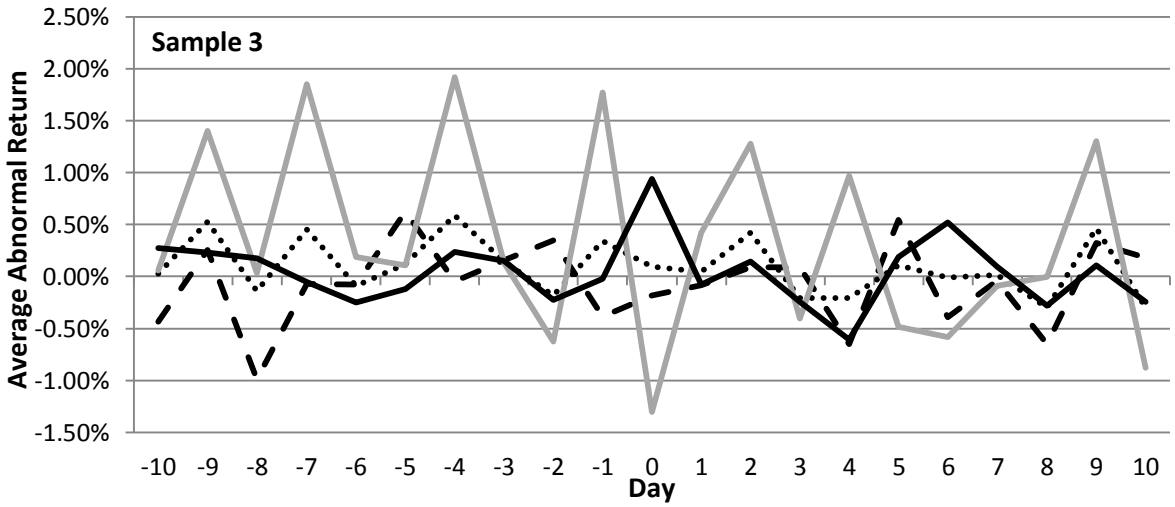
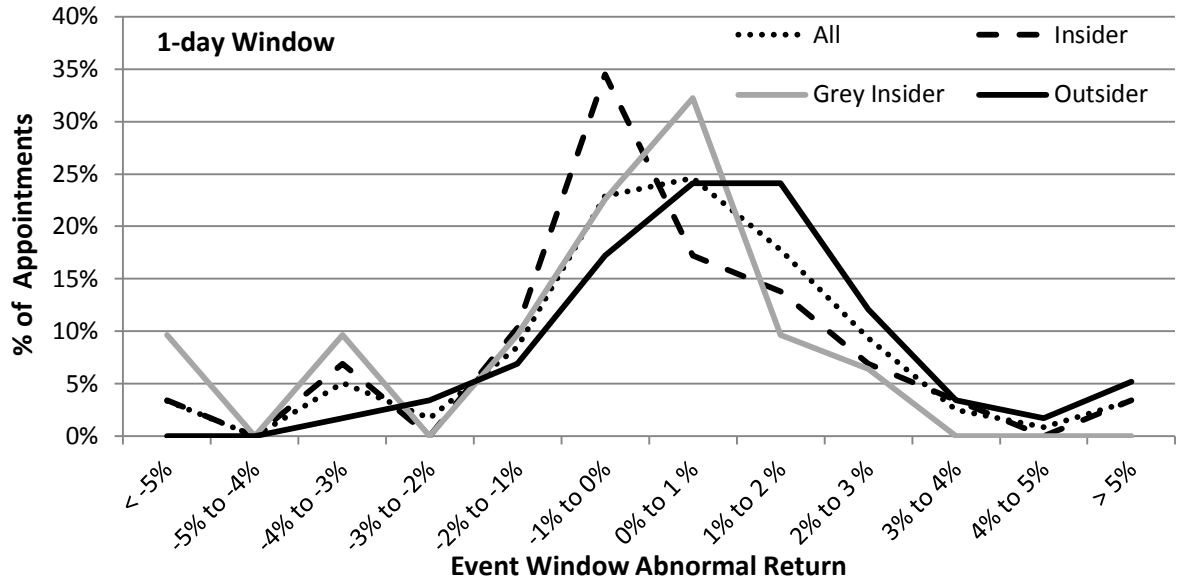
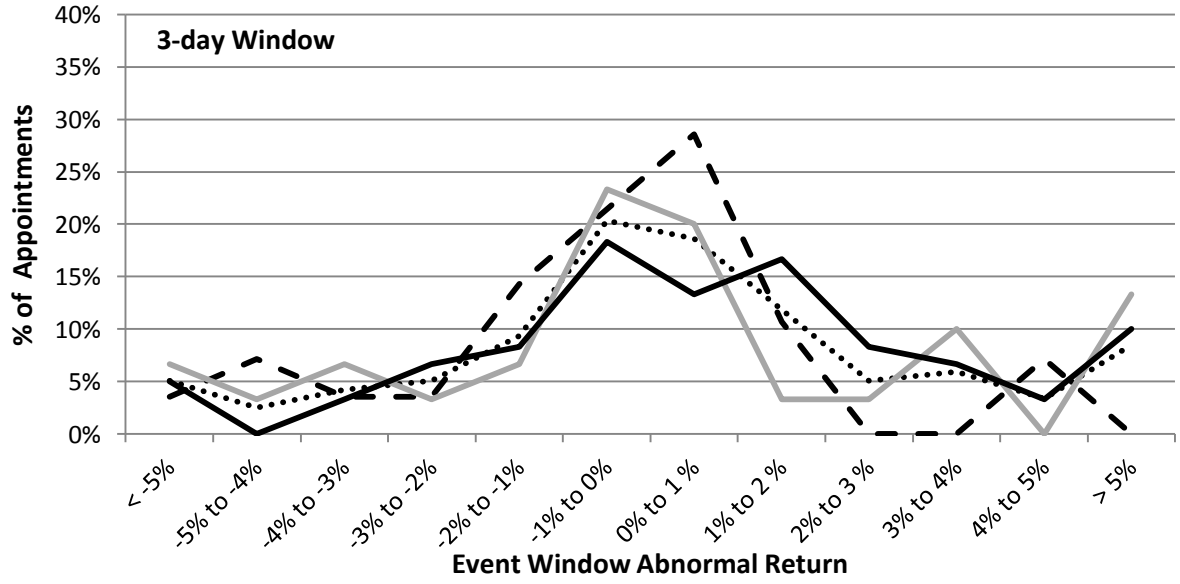


Figure 4.3: Distributions of Abnormal Returns

Graphs of Sample 1





Before analysing average abnormal returns, I address the potential problem of outliers. As shown in Figure 4.3, there are several appointments in the tails of the distributions. If these appointments are outliers then they will bias the analysis. To avoid this problem, the six samples are winsorised. I calculate the mean and standard deviation of the abnormal returns for each sample. For any appointments that do not fall within *mean ± 3*stdev* for the given sample, I set their abnormal return equal to the closest end of this range. Table 4.2 shows the number of appointments affected

by the winsorising process. For all of the 3-day samples, one appointment has its abnormal return set to the respective sample's upper limit. For all of the 1-day samples, two appointments have their abnormal return set to the respective sample's lower limit; and for sample 2, one appointment has its abnormal return set to the sample's upper limit.

Table 4.2: Appointments Affected by the Winsorising Process

For each sample, Table 4.2 shows the number of appointments affected by the winsorising process. The winsorising process is as follows: (a) calculate the mean and standard deviation of the abnormal returns for each sample; and (b) for any appointments that do not fall within *mean ± 3*stdev* for the given sample, set their abnormal return equal to closest end of this range. The CEO origins and samples are defined in Appendices A.1 and A.2 respectively.

	1-day Window, Sample 1	**1-day Window, Sample 2**	**1-day Window, Sample 3**	**3-day Window, Sample 1**	**3-day Window, Sample 2**	**3-day Window, Sample 3**
Lower Limit	2 grey Insiders	1 insider & 1 grey insider	2 grey insiders	-	-	-
Upper Limit	-	1 outsider	-	1 grey insider	1 grey insider	1 grey insider

Using the winsorised samples, I calculate mean abnormal returns and present the results in Table 4.3. In columns (1) through (4), I display the means of each sample and the p-values of each mean.[15] Column (1) shows that CEO appointments in general are associated with small positive abnormal returns that cannot be statistically distinguished from 0. In comparison, several studies analyse US CEO appointments and find similar sized abnormal returns (between 0.3 and 0.8%) that are statistically significant (Adams & Mansi, 2009; Falato & Kadyrzhanova, 2012; Falato et al., 2009; Huson et al., 2004). In column (2), I show that insiders elicit negative abnormal returns that are statistically insignificant. An insignificant finding for insiders is consistent with several papers (e.g., Adams & Mansi, 2009; Dahya & McConnell, 2005; Falato & Kadyrzhanova, 2012; Falato et al., 2009). Column (3) shows that grey insiders are associated with mixed abnormal returns: their 1-day

[15] I use t-statistics in columns (1) through (4). An obvious extension, which is beyond the scope of this thesis, is to use more sophisticated non-parametric statistics. Bartholdy et al. (2007) explain how to use such statistics on trade-to-trade abnormal returns.

abnormal return is around -0.9%, which is statistically significant at the 10% level for samples 1 and 3; whereas their 3-day abnormal return is around 0.5%, which is statistically insignificant for all samples. Finally, column (4) reveals that outsiders are associated with positive abnormal returns: they have a 1-day abnormal return of around 1%, which is statistically significant at the 1% level for all samples; and they have a 3-day abnormal return of around 0.6%, which is statistically insignificant for all samples. These abnormal returns are in the lower range of those observed in the US and UK; other studies find outsider abnormal returns of between 0.8 and 2.7% which are statistically significant at the 1% level (Adams & Mansi, 2009; Dahya & McConnell, 2005; Falato & Kadyrzhanova, 2012; Falato et al., 2009).

In the final three columns of Table 4.3, I display the differences in means and the p-values of the differences. Column (5) shows that insiders deliver a 1-day abnormal that is approximately 0.8% higher than that delivered by grey insiders; this difference, however, cannot be statistically distinguished from 0. The performance relation is reversed for the 3-day period: grey insiders deliver an abnormal return that is approximately 0.9% higher than that delivered by insiders; this difference again, however, cannot be statistically distinguished from 0. In column (6), I document that outsiders are associated with higher abnormal returns than insiders: the 1-day differential is approximately 1.0%, which is statistically significant at the 10% level for samples 1 and 2 and statistically significant at the 5% level for sample 3; and the 3-day differential is approximately 1.1%, which is only statistically significant at the 10% level for sample 3. In comparison, other studies use US and UK CEO appointments and also find that outsiders dominate insiders; they report differences between 0.6 and 2.3% that are statistically significant (Adams & Mansi, 2009; Dahya & McConnell, 2005; Falato & Kadyrzhanova, 2012). Finally, column (7) reveals that outsiders elicit higher abnormal returns than grey insiders do. For the 1-day window, the difference is approximately 1.9%, which is statistically significant at the 5% level. For the 3-day window, grey insiders close the performance gap: the difference is approximately 0.2% and is no longer statistically significant.

Overall, this section shows that outsiders are associated with the highest abnormal returns. On the appointment announcement day, outsiders have significant positive abnormal returns, which are significantly higher than those of insiders and grey insiders. The event study analysis also finds no systematic performance difference between insiders and grey insiders. These findings must be interpreted with caution, however, as simple bivariate comparisons do not control for factors that may be correlated with CEO origin and abnormal returns. In the next section, I control for such factors and isolate the effect of CEO origin on abnormal returns.

Table 4.3: Event Study Results

Table 4.3 presents the results of the event study. Panels A and B show the 1-day and 3-day appointment announcement abnormal returns respectively. In columns (1) through (4), the number outside the parenthesis is the mean abnormal return, and the number inside the parenthesis is the p-value of a two tailed t-test, checking whether the mean is statistically significant from 0. In columns (5) through (7), the number outside the parenthesis is the difference in mean abnormal returns, and the number inside the parenthesis is the p-value of a two tailed t-test, checking whether the difference is statistically significant from 0. This latter t-test assumes an unequal variance between the two respective samples. The CEO origins and samples are defined in Appendices A.1 and A.2 respectively.

	All	**Insider**	**Grey Insider**	**Outsider**	**Difference (2) - (3)**	**Difference (2) - (4)**	**Difference (3) - (4)**
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A: 1-day Window							
Sample 1	0.24% (0.279)	0.07% (0.875)	-0.93% (0.063)	0.95% (0.001)	1.00% (0.133)	-0.88% (0.096)	-1.88% (0.001)
Sample 2	0.45% (0.061)	-0.08% (0.864)	-0.65% (0.288)	0.99% (0.001)	0.58% (0.447)	-1.07% (0.055)	-1.64% (0.021)
Sample 3	0.15% (0.509)	-0.18% (0.657)	-1.07% (0.053)	0.94% (0.001)	0.89% (0.185)	-1.12% (0.025)	-2.01% (0.002)
Average	**0.28%**	**-0.06%**	**-0.89%**	**0.96%**	**0.82%**	**-1.02%**	**-1.85%**
Panel B: 3-day Window							
Sample 1	0.30% (0.379)	-0.45% (0.341)	0.37% (0.685)	0.61% (0.175)	-0.81% (0.424)	-1.06% (0.103)	-0.25% (0.806)
Sample 2	0.50% (0.255)	-0.31% (0.636)	0.63% (0.698)	0.73% (0.158)	-0.94% (0.590)	-1.05% (0.213)	-0.10% (0.951)
Sample 3	0.22% (0.548)	-0.68% (0.144)	0.38% (0.706)	0.56% (0.238)	-1.06% (0.340)	-1.24% (0.061)	-0.18% (0.875)
Average	**0.34%**	**-0.48%**	**0.46%**	**0.63%**	**-0.94%**	**-1.11%**	**-0.18%**

4.4 Regression Analysis

I estimate the following regressions:

$$AR = a + b(INSIDER) + c(GREY) + d(SIZE) + e(INDUSTRY) + f(PRIOR) + \varepsilon \quad (4.5)$$

$$AR = a + b(OUTSIDER) + c(GREY) + d(SIZE) + e(INDUSTRY) + f(PRIOR) + \varepsilon \quad (4.6)$$

where AR is the winsorised abnormal return. INSIDER, GREY, and OUTSIDER are dummy variables, which are set equal to 1 if the appointment is an insider, grey insider, or outsider respectively, and 0 otherwise; the CEO origin classification is outlined in section 3.2. (4.5) gives the performance of insiders and greys relative to outsiders, whereas (4.6) gives the performance of outsiders and grey insiders relative to insiders; estimating (4.5) and (4.6) ensures that each CEO origin is compared with the other two. I estimate the (4.5) and (4.6) with OLS and adjust the standard errors for within firm correlation.

4.4.1 Control Variables

SIZE measures the appointing firm's size. SIZE is equal to log(ASSET), where ASSET is the book value of the firm's total assets measured at the CEO's starting date and then converted to June 2012 dollars.[16] I take the log of ASSET to mitigate the effect of outliers, and describe the data collection process for ASSET and all the other control variables in Appendix A.5. I control for SIZE because shares of smaller firms have outperformed those of larger firms (Fama & French, 1992); and because smaller firms have less insider candidates and so are more likely to hire outsider candidates (e.g., Agrawal et al., 2006; Dalton & Kesner, 1983; Lauterbach et al., 1999; Parrino, 1997).

INDUSTRY indicates the appointing firm's industry at the time of the appointment announcement. INDUSTRY consists of five dummy variables that are based on the six broad NZX industry

[16] To measure ASSET at the CEO's starting date, I take a weighted average of the preceding and subsequent total asset figures. Sometimes the subsequent figure is not available, so I only use the preceding figure. This weighted average is then converted to June 2012 dollars by using the Consumer Price Index (CPI), which is available from http://www.rbnz.govt.nz/statistics/tables/m1/.

classifications: energy, goods, primary, property, services, and investment (the excluded dummy).[17] I control for INDUSTRY because the importance of a CEO may differ across industries, influencing the reaction of investors. It is hard to tell ex-ante which industries will be associated with higher abnormal returns because I cannot find any related literature. INDUSTRY may also be correlated with CEO origin. Different industries may seek different levels of specific and generic skills and hence favour different CEO origins. Also, Parrino (1997) finds that firms with more competitors (i.e., competitive industries) are more likely to hire outsiders; these firms can poach experienced outsider executives from similar firms.

PRIOR measures the appointing firm's performance prior to the appointment announcement. PRIOR is the firm's stock return minus the NZX All's stock return over the 12 months prior to the appointment announcement.[18] I control for PRIOR because CEOs who inherit struggling firms may have greater scope to improve firm prospects, which investors presumably realise and incorporate into their reaction. Consistent with this story, Denis and Denis (1995) find significant positive abnormal returns around the appointment announcement for forced turnovers (a proxy for low PRIOR), and insignificant returns for voluntary turnover (a proxy for high PRIOR).

PRIOR is also likely correlated with CEO origin; several studies find that thriving firms hire more insiders and struggling firms hire more outsiders (e.g., Agrawal et al., 2006; Ang & Nagel, 2009; Parrino, 1997). Boards of thriving firms seek the status quo and believe that insiders, with their firm-specific knowledge, can provide this with the least disruption. Also, thriving firms can attract talented senior executives and have sufficient resources to help them improve their management skills, implying that these firms are more likely to have strong insider candidates. Conversely, boards of struggling firms seek change and believe that outsiders, with their fresh perspectives and outside experience, can provide this with the most efficiency. Struggling firms may also have weaker insider candidates.

[17] The goods, primary, and services classifications consist of several sub-industries. Goods contain food and beverages, intermediate and durables, and textiles and apparel. Primary contains agriculture and fishing, building materials and construction, forestry and forest products, and mining. Services contain consumer, finance and other services, leisure and tourism, media and telecommunications, ports, and transport. The small sample size of this thesis permits using these sub-industries as more refined classifiers.

[18] The return period ends two days before the appointment announcement date, so that PRIOR excludes returns caused by the announcement.

Table 4.4 presents the summary statistics of the control variables. The summary statistics are based on the entire thesis sample rather than the more restricted event study samples. In the ASSET row of Table 4.4, I show that the mean (median) firm size is approximately $1109m ($185m). I also discover a large range in firm sizes: the smallest firm has around $1m worth of assets, while the largest has around $12b. These firms are generally much smaller than those used in comparable studies (e.g., Ang & Nagel, 2009; Huson et al., 2004); and presumably this is because this thesis analyses NZ (i.e., small economy) firms, whereas comparable studies analyse US (i.e., big economy) firms. The ASSET row shows that grey insiders are appointed to the largest firms on average and that insiders are, as expected, appointed to larger firms than outsiders.

Table 4.4: Summary Statistics of the Control Variables

Table 4.4 presents the summary statistics of the control variables. The summary statistics are based on the entire thesis sample rather than the more restricted event study samples. The CEO origins and control variables are defined in Appendix A.1.

	# Obs	Mean	Median	Stdev	Minimum	Maximum
ASSET ($m)						
All	162	1109	185	2317	1	11896
Insiders	42	1543	272	2796	19	11896
Grey Insiders	38	1554	353	2581	1	11195
Outsiders	82	680	114	1814	3	11528
SIZE						
All	162	5.32	5.27	0.84	3.06	7.08
Insiders	42	5.49	5.43	0.81	4.28	7.08
Grey Insiders	38	5.52	5.55	0.96	3.06	7.05
Outsiders	82	5.15	5.06	0.76	3.40	7.06
INDUSTRY						
All	162	10% ENERGY, 13% GOODS, 19% PRIMARY, 6% PROPERTY, 46% SERVICES, and 6% INVESTMENT				
Insiders	42	7% ENERGY, 14% GOODS, 24% PRIMARY, 5% PROPERTY, 48% SERVICES, and 2% INVESTMENT				
Grey Insiders	38	16% ENERGY, 5% GOODS, 13% PRIMARY, 11% PROPERTY, 39% SERVICES, and 16% INVESTMENT				
Outsiders	82	8% ENERGY, 15% GOODS, 19% PRIMARY, 5% PROPERTY, 49% SERVICES, and 4% INVESTMENT				
PRIOR						
All	161	-8%	-6%	39%	-96%	133%
Insiders	42	-4%	-1%	35%	-82%	128%
Grey Insiders	38	-17%	-12%	43%	-92%	107%
Outsiders	81	-6%	-4%	38%	-96%	133%

Table 4.4 also displays the breakdown of firms by INDUSTRY: 10% energy, 13% goods, 19% primary, 6% property, 46% services, and 6% investment. These numbers compare closely to the NZX's current

composition (as at 23 April 2014): 8% energy, 12% goods, 13% primary, 9% property, 49% services, and 10% investment.[19] The INDUSTRY row reveals that insiders are more prevalent in the primary industry, whereas grey insiders are more prevalent in the energy, property, and investment industries. And outsiders are not especially common in any of the industries.

In the PRIOR row of Table 4.4, I observe that CEO appointments generally occur after poor firm performance. This observation is consistent with the literature (e.g., Fee & Hadlock, 2004; Huson et al., 2004; Warner, Watts, & Wruck, 1988). The PRIOR row also shows that grey insiders inherit the poorest performing firms on average and that outsiders inherit, as expected, poorer performing firms than insiders.

4.4.2 Regression Results

Before presenting the regression results, I check for multicollinearity. I calculate the correlations between each pair of independent variables and display the results for sample 1 of the 1-day window in Table 4.5; I do not display the correlation tables of the other samples as they are similar to Table 4.5. Table 4.5 shows that the independent variables are not highly correlated with each other, so multicollinearity is not a problem. In fact, the correlations are all smaller than |0.5| except those among the CEO origin variables.

Table 4.6 summarises the regression results. In columns (1) through (3), I present the coefficient estimates and p-values of the INSIDER, GREY, and OUTSIDER variables. Column (1) confirms that outsiders outperform insiders: the 1-day and the 3-day differentials are approximately 1.2% and 1.7% respectively, and both are statistically significant at the 5% level for all samples. A recent study that also controls for other factors is Adams and Mansi (2009); they analyse US CEO appointments and document a 3-day differential of 1.4%, which is statistically significant at the 5% level. In column (2), I show that outsiders deliver higher abnormal returns than grey insiders, but the differences are only statistically significant over the 1-day period for samples 1 and 3. These significant differences are economically large, about 1.7%. Finally, column (3) reveals no statistically significant differences between insiders and grey insiders.

[19] I exclude NZAX and Overseas (No Index) firms from this current sample so that I do not have to manually re-categorise their industries. In contrast, I include some of these firms in the thesis sample. So the current and thesis samples are selected slightly differently.

Table 4.5: Correlations between Independent Variables

Table 4.5 shows the correlations between the independent variables of sample 1 of the 1-day window. The correlation tables of the other samples are similar to Table 4.5. The independent variables and samples are defined in Appendices A.1 and A.2 respectively.

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
1. INSIDER	1.00									
2. GREY	-0.34	1.00								
3. OUTSIDER	-0.56	-0.59	1.00							
4. SIZE	0.11	0.07	-0.16	1.00						
5. PRIMARY	0.03	-0.04	0.01	0.12	1.00					
6. ENERGY	-0.01	0.10	-0.08	0.21	-0.17	1.00				
7. GOODS	0.08	-0.11	0.03	-0.33	-0.18	-0.13	1.00			
8. PROPERTY	-0.08	0.07	0.00	0.07	-0.13	-0.09	-0.10	1.00		
9. SERVICES	0.01	-0.14	0.12	0.11	-0.42	-0.31	-0.34	-0.24	1.00	
10. PRIOR	0.01	-0.15	0.12	0.12	0.09	0.07	0.04	0.07	-0.05	1.00

Table 4.7 presents the full regression outputs of equation (4.5); those of equation (4.6) are omitted as they do not add anything new except the performance of grey insiders relative to outsiders which is documented in Table 4.6. SIZE's coefficients are consistently positive, which is a surprise. They are statistically significant at the 10% level for all but one sample and are economically significant: approximately 0.6% and 1.3% for the 1-day and 3-day windows respectively. Energy and goods are the only INDUSTRY dummy variables that are statistically significant for more than one sample; these industries are associated with higher 1-day abnormal returns than the investment industry and the differences are economically significant (between 2.4 and 3.8%). PRIOR's coefficients are negative as predicted, but they cannot be statistically distinguished from 0. The regressions have an average R-squared of around 0.27 and 0.11 for the 1-day and 3-day windows respectively.

Overall, the regression results confirm the earlier findings: outsiders are associated with the highest 1-day abnormal returns; outsiders deliver significantly higher 3-day abnormal returns than that delivered by insiders; and there is no performance difference between insiders and grey insiders.

Table 4.6: Summarised Regression Results

Table 4.6 summarises the results of the regression analysis. Panels A and B show the 1-day and 3-day event window results respectively. Equations (4.5) and (4.6) are estimated using OLS and the standard errors are adjusted for within firm correlation. The dependent variable is AR (the winsorised appointment announcement abnormal return). The independent variables of interest are INSIDER, GREY, and OUTSIDER. The control variables are SIZE, INDUSTRY, and PRIOR. In columns (1) through (3), the number outside the parenthesis is the coefficient of INSIDER in equation (4.5), GREY in equation (4.5), and GREY in equation (4.6) respectively; and the number inside the parentheses is the p-value of a two tailed t-test, checking whether the coefficient is statistically significant from 0. The variables and samples are defined in Appendices A.1 and A.2 respectively.

	INSIDER relative to OUTSIDER	**GREY relative to OUTSIDER**	**GREY relative to INSIDER**
	(1)	(2)	(3)
Panel A: 1-day Window			
Sample 1	-1.13% (0.024)	-1.71% (0.002)	-0.58% (0.364)
Sample 2	-1.05% (0.018)	-1.08% (0.114)	-0.002% (0.972)
Sample 3	-1.40% (0.004)	-1.76% (0.003)	-0.36% (0.570)
Average	**-1.19%**	**-1.52%**	**-0.32%**
Panel B: 3-day Window			
Sample 1	-1.56% (0.011)	-1.12% (0.243)	0.44% (0.651)
Sample 2	-1.67% (0.023)	-1.33% (0.314)	0.34% (0.815)
Sample 3	-1.76% (0.006)	-1.13% (0.283)	0.63% (0.555)
Average	**-1.66%**	**-1.19%**	**0.47%**

Table 4.7: Full Regression Results

Table 4.7 presents the full regression outputs of equation (4.5); those of equation (4.6) are omitted as they do not add anything new except the performance of grey insiders relative to outsiders which is documented in Table 4.6. Panels A and B show the 1-day and 3-day event window regression outputs respectively. Equation (4.5) is estimated using OLS and the standard errors are adjusted for within firm correlation. Equation (4.5)'s dependent variable is AR (the winsorised appointment announcement abnormal return). The independent variables of interest are INSIDER and GREY. The control variables are SIZE, INDUSTRY (five dummy variables), and PRIOR. The number outside the parenthesis is the coefficient estimate and the number inside the parentheses is the p-value of a two tailed t-test, checking whether the coefficient is statistically significant from 0. The variables and samples are defined in Appendices A.1 and A.2 respectively.

	Sample 1	**Sample 2**	**Sample 3**
Panel A: 1-day Window			
INTERCEPT	-5.04% (0.006)	-4.64% (0.014)	-4.90% (0.008)
INSIDER	-1.13% (0.024)	-1.05% (0.018)	-1.40% (0.004)
GREY	-1.71% (0.002)	-1.08% (0.114)	-1.76% (0.003)
SIZE	0.74% (0.014)	0.50% (0.103)	0.73% (0.015)
PRIMARY	1.89% (0.246)	2.79% (0.100)	1.86% (0.248)
ENERGY	2.47% (0.109)	2.88% (0.039)	2.37% (0.015)
GOODS	3.03% (0.047)	3.78% (0.008)	2.98% (0.049)
PROPERTY	1.86% (0.206)	2.78% (0.041)	1.51% (0.306)
SERVICES	1.91% (0.211)	2.85% (0.038)	1.73% (0.252)
PRIOR	-0.15% (0.748)	-0.40% (0.472)	-0.05% (0.917)
# Obs, R-squared	118, 0.251	79, 0.285	110, 0.274
Panel B: 3-day Window			
INTERCEPT	-3.75% (0.382)	-6.46% (0.386)	-3.82% (0.379)
INSIDER	-1.56% (0.011)	-1.67% (0.023)	-1.76% (0.006)
GREY	-1.12% (0.243)	-1.33% (0.314)	-1.13% (0.283)
SIZE	1.19% (0.029)	1.42% (0.075)	1.22% (0.030)
PRIMARY	-2.28% (0.481)	-0.96% (0.853)	-2.43% (0.456)
ENERGY	-1.58% (0.625)	-0.62% (0.902)	-1.69% (0.604)
GOODS	-0.88% (0.792)	0.99% (0.853)	-1.14% (0.730)
PROPERTY	-3.40% (0.288)	-1.60% (0.752)	-3.90% (0.230)
SERVICES	-2.12% (0.515)	-0.48% (0.926)	-2.24% (0.493)
PRIOR	-1.35% (0.150)	-2.09% (0.122)	-1.28% (0.200)
# Obs, R-squared	118, 0.098	79, 0.117	109, 0.105

There are a few limitations to this chapter's analysis. A possible explanation for the poor performance of insiders is that their appointments are expected and hence investors do not react to their appointment announcements; consistent with this explanation, Table 4.3 shows that the abnormal returns of insiders cannot be statistically distinguished from zero. Another possible weakness of this chapter's analysis is that the CAPM can be a poor model for estimating expected returns (Fama & French, 2004); further research could experiment with other models. Finally, this chapter's analysis relies on reduced sample sizes due to the lack of share price data and the presence of confounding announcements.

5 Change in the Market-to-Book Ratio

In this chapter, I examine the relationship between CEO origin and the 3-year change in the appointing firm's market-to-book (MTB) ratio. Before doing this examination, I explain the rationale and measurement of the change in MTB ratio, and outline the sample selection for this chapter's analysis.

5.1 Rationale and Measurement

In the previous chapter, the appointment announcement abnormal returns focus on the expected impact of the CEO on shareholders. I am also interested in the realised impact of the CEO, so I use a longer term performance measure: the 3-year change in the appointing firm's MTB ratio. The MTB ratio is used as a proxy for Tobin's q (e.g., Pérez-González, 2006). A positive change in the MTB ratio (or Tobin's q) reveals that equity investors are willing to pay a higher market premium for the firm's assets, i.e., those assets have become more 'valuable'.

I choose a market-based rather than an accounting-based performance measure for the following reasons: market measures are less susceptible to manipulation by opportunistic managers; market measures are forward looking, capturing the prospects of today's actions by CEOs; market measures pick up changes in shareholder wealth, which is what finance scholars care about; and market measures implicitly control for non-time-varying firm characteristics because these characteristics are already priced into the base performance level. I use a 3-year period to measure performance because it is common to do so (e.g., Falato & Kadyrzhanova, 2012; Huson et al., 2004; Karaevli, 2007; Pérez-González, 2006).

Firm *j*'s MTB ratio is defined as follows:

$$MTB_{j,t} = \frac{Market\ Capitalisation_{j,t}}{Book\ Equity_{j,t}}, \quad for\ t = initial, end$$

where $Market\ Capitalisation_{j,t}$ and $Book\ Equity_{j,t}$ are firm *j*'s time t market value of equity and book value of equity respectively.[20] Therefore,

[20] The data collection process for these variables is described in Appendix A.4.

$$\Delta\, MTB_j = \frac{MTB_{j,end} - MTB_{j,initial}}{MTB_{j,initial}}$$

is the 3-year change in the firm *j*'s MTB ratio. $\Delta\, MTB$ is defined as a percentage change so that it scales changes: it recognises that a 0.5 increase is more significant from a low base (e.g., $MTB_{j,initial}$ equal to 1) rather than a high base (e.g., $MTB_{j,initial}$ equal to 2). A percentage change also allows an intuitive interpretation of results and is approximately equal (for small changes at least) to the obvious alternative, a log change.

$MTB_{j,initial}$ is measured prior to the appointment announcement, so that it excludes investor expectations about the appointed CEO. Specifically, $Market\ Capitalisation_{j,initial}$ is measured two trading days prior to the appointment announcement, whereas $Book\ Equity_{j,initial}$ is measured at the announcement date.[21]

The measurement of $MTB_{j,end}$ is more complex. Each appointment falls into one of the following cases:

(i) The CEO is still in the job after three years and the firm is still listed on the NZX after three years. In this case, I measure $Market\ Capitalisation_{j,end}$ and $Book\ Equity_{j,end}$ at the end of the three years. The three years is defined as the CEO's starting date plus three years.[22] 79 (out of 162) appointments fall into this case, and the breakdown by CEO origin is 31 (out of 42) insiders, 19 (out of 38) grey insiders, and 29 (out of 82) outsiders.

(ii) The CEO is not in the job after three years and the firm is still listed on the NZX at the CEO's leaving date. In this case, $Book\ Equity_{j,end}$ is measured at the CEO's leaving date;[23] and $Market\ Capitalisation_{j,end}$ is measured two days prior to the CEO's leaving

[21] To measure $Book\ Equity_{j,t}$ at an exact date, I take a weighted average of the preceding and subsequent book equity figures. Sometimes the subsequent figure is not available, so I only use the preceding figure.

[22] The starting date is the CEO's first day in the job and it often differs from the appointment announcement date. I use the starting date so that all CEOs, who last three years, have an equal amount of time in the job to impress shareholders.

[23] The leaving date is the CEO's last day in the job. I use the leaving date rather than the 3-year date for the following reason: if the CEO leaves within three years and $Book\ Equity_{j,end}$ is measured at the 3-year date, then it may capture *both* the appointed CEO's and the replacement CEO's impact.

announcement.[24] 57 appointments fall into this case, and the breakdown by CEO origin is 6 insiders, 12 grey insiders, and 39 outsiders.

(iii) The firm delists from the NZX within three years of the CEO's starting date and the CEO is still in the job at the time of delisting. In this case, the measurement of $MTB_{j,end}$ depends on the reason for delisting:

a. If the firm delists because it is in receivership, then I set $MTB_{j,end}$ equal to 0 (i.e., I set $\Delta\, MTB_j$ equal to -100%).[25] Seven appointments fall into this case, and the breakdown by CEO origin is three grey insiders and four outsiders.

b. If the firm delists because it is acquired by a third party or because it decides to save on listing costs, then $Market\ Capitalisation_{j,end}$ and $Book\ Equity_{j,end}$ are measured on the firm's final NZX trading day.[26] 18 appointments fall into this case - 16 are in the acquired group and 2 are in the decided to delist group. The breakdown by CEO origin is 5 insiders, 4 grey insiders, and 9 outsiders.

Table 5.1: Summary Statistics of $MTB_{j,initial}$ and $MTB_{j,end}$

Table 5.1 presents the summary statistics of $MTB_{j,initial}$ and $MTB_{j,end}$. These variables are defined above.

	Mean	**Median**	**Stdev**	**Minimum**	**Maximum**
$MTB_{j,initial}$	2.08	1.37	2.49	-1.38	19.91
$MTB_{j,end}$	1.96	1.24	2.98	0.00	29.45

Table 5.1 presents the summary statistics of $MTB_{j,initial}$ and $MTB_{j,end}$. The Mean and Median columns show that the $MTB_{j,t}$s are generally greater than 1 - investors place a premium on the market value of equity. However, this premium is smaller for $MTB_{j,end}$ than $MTB_{j,initial}$. The Minimum column displays a negative $MTB_{j,initial}$ because one firm has a negative $Book\ Equity_{initial}$. A negative $MTB_{initial}$ can lead to a spurious $\Delta\, MTB$, but this is not a problem

[24] $Market\ Capitalisation_{j,end}$ is measured two days prior to the CEO's leaving announcement, so that it includes investor expectations about the appointed CEO and excludes expectations about the replacement CEO.

[25] CEOs of receivership firms often resign before the delisting date. Even though they do not technically fall into case (iii), I still set their $MTB_{j,end}$ equal to 0.

[26] I use the final NZX trading day because it is the last possible date to record $Market\ Capitalisation_{j,end}$, giving the most up-to-date information on CEO performance.

here as the firm goes bankrupt (i.e., its ΔMTB is manually set to -100%). The Maximum column shows that some firms have very high MTB ratios - presumably those with bright prospects.

5.2 Sample Selection

I start with the 162 CEO appointments and sequentially put each appointment through the following criteria:

(i) There must be sufficient data to measure ΔMTB_j. I cannot measure ΔMTB_j for one appointment (an outsider) because its $Market\ Capitalisation_{initial}$ data is missing.

(ii) There must be a clear link between firm performance and CEO performance. A grey area is as follows: should a CEO be held responsible for their firm being acquired? On the one hand, a CEO may have deliberately and brilliantly positioned the company to be taken over, extracting a takeover premium, and hence should be rewarded with a positive ΔMTB; or a CEO may have run the company so poorly that acquirers believe they can buy it cheaply and run it more efficiently. On the other hand, it is plausible that a takeover has little to do with the CEO. For example, the CEO could just be in the right place at the right time; the takeover premium is more from luck than the CEO's actions. To rule out the latter possibility, I exclude the appointments whose MTB_{end}s are measured early because of a takeover. This criterion reduces the sample by 16 appointments (5 insiders, 4 grey insiders, and 7 outsiders).

I use three samples: sample 1 passes criterion (i), sample 2 passes criteria (i) and (ii), and sample 3 is the common sample.[27] Samples 1, 2, and 3 have 161, 145, and 110 appointments respectively. The CEO origin distribution of the three samples is very similar to that of the sample before restrictions.

5.3 Initial Analysis

I present the summary statistics of ΔMTB in Table 5.2 and display the distributions of ΔMTB in Figure 5.1. The All rows of Table 5.2 show that CEO appointments are generally associated with small positive mean ΔMTBs, but large negative median ΔMTBs. This discrepancy can be explained by the natural asymmetry in ΔMTB's distribution: its downside is limited to -100%, whereas its upside is unlimited. The means and medians are smallest for sample 2 which makes sense because this

[27] As explained in Chapter 4, sample 3 is used in the analysis of all three performance measures. For this and the next chapter, I use the common sample of the 1-day (rather than the 3-day) event window because it is slightly larger.

sample excludes some appointments associated with takeover premiums. In the All plots of Figure 5.1, I find that approximately 60% of CEO appointments are associated with negative ΔMTBs. I also discover that there is a lot of variation in ΔMTB: the All columns display a range of 487% and a standard deviation between 74 and 80%; and the All plots show that approximately 13% of CEOs do poorly (ΔMTB < -60%) and 10% do well (ΔMTB > 100%).

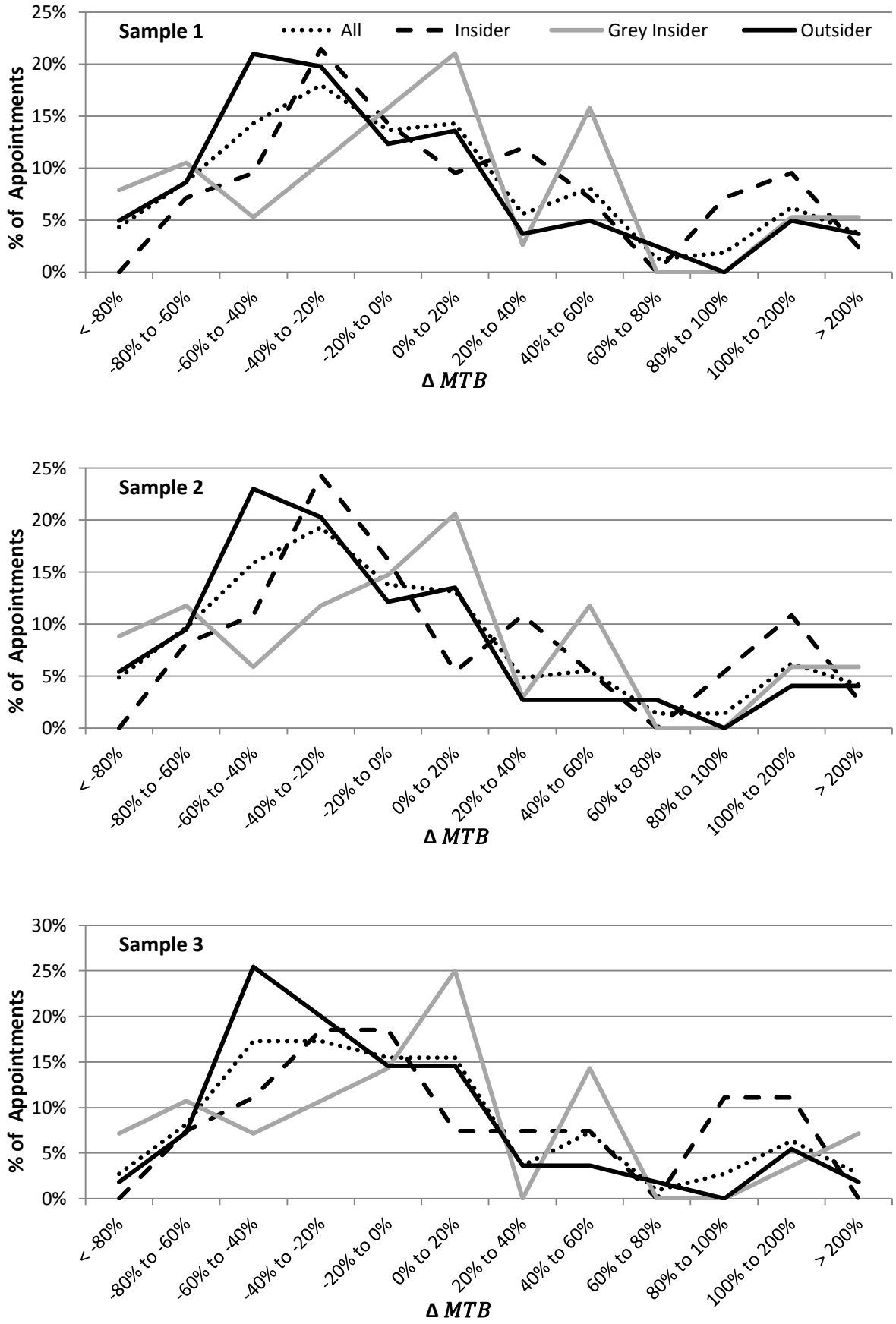
I find that insiders deliver the highest mean ΔMTBs and also deliver no shocking performances (ΔMTB < -80%). Grey insiders are associated with the highest median ΔMTBs but are risky: they have the highest range and standard deviation, and approximately 20% of them perform poorly (ΔMTB < -60%). Finally, outsiders are easily the worst performers. A large majority of outsiders destroy shareholder wealth - around 70% of outsiders deliver negative ΔMTBs, whereas only around 55% of insiders and around 50% of grey insiders do likewise. The summary statistics and graphs support the following performance relation: insiders = greys >> outsiders.

Table 5.2: Summary Statistics of ΔMTB

Table 5.2 presents the summary statistics of ΔMTB (the 3-year change in the appointing firm's market-to-book ratio). Panels A, B, and C show the statistics of samples 1, 2, and 3 respectively. The CEO origins and samples are defined in Appendices A.1 and A.2 respectively.

	# Obs	**Mean**	**Median**	**Stdev**	**Minimum**	**Maximum**
Panel A: Sample 1						
All	161	4%	-15%	77%	-100%	387%
Insider	42	16%	-4%	70%	-77%	224%
Grey Insider	38	11%	0%	93%	-100%	387%
Outsider	81	-6%	-21%	72%	-100%	290%
Panel B: Sample 2						
All	145	1%	-20%	80%	-100%	387%
Insider	37	12%	-16%	73%	-77%	224%
Grey Insider	34	10%	-5%	98%	-100%	387%
Outsider	74	-9%	-22%	73%	-100%	290%
Panel C: Sample 3						
All	110	2%	-16%	74%	-100%	387%
Insider	27	14%	-6%	68%	-77%	170%
Grey Insider	28	14%	-2%	102%	-100%	387%
Outsider	55	-10%	-21%	58%	-100%	235%

Figure 5.1: Distributions of ΔMTB



5.4 Bivariate Analysis

Before doing the bivariate analysis, I address the potential problem of outliers. As shown in Figure 5.1, there are several appointments in the tails of the distributions. If these appointments are outliers then they will bias the analysis. To avoid this problem, the three samples are winsorised. I calculate the mean and standard deviation of $\Delta\, MTB$ for each sample. For any appointments that do not fall within *mean ± 3*stdev* for the given sample, I set their $\Delta\, MTB$ equal to the closest end of this range. As shown in Table 5.3, the number of appointments affected by the winsorising process is three for sample 1, two for sample 2, and two for sample 3. These appointments are either grey insiders or outsiders and their $\Delta\, MTB$s are set to their respective sample's upper limit.

Table 5.3: Appointments Affected by the Winsorising Process

For each sample, Table 5.3 details the number of appointments affected by the winsorising process. The winsorising process is as follows: (i) calculate the mean and standard deviation of $\Delta\, MTB$ for each sample; and (ii) for any appointments that do not fall within *mean ± 3*stdev* for the given sample, set their $\Delta\, MTB$ equal to closest end of this range. The CEO origins and samples are defined in Appendices A.1 and A.2 respectively.

	Sample 1	**Sample 2**	**Sample 3**
Lower Limit	-	-	-
Upper Limit	1 grey insider & 2 outsiders	1 grey insider & 1 outsider	1 grey insider & 1 outsider

Using the winsorised samples, I run the bivariate analysis and present the results in Table 5.4. In columns (1) through (4) of Panel A, I display the mean $\Delta\, MTB$s of each sample and the p-values of each mean. And in columns (5) through (7) of Panel A, I display the differences in means and the p-values of the differences. Due to the winsorising process, the means of CEOs in general, grey insiders, and outsiders are smaller than those in Table 5.2; insiders still have the highest means followed by grey insiders and then outsiders. However, almost all of the means and the differences cannot be statistically distinguished from 0; the exception is sample 1's 21.93% insider-outsider difference, which is significant at the 10% level.

Table 5.4: Bivariate Results

Table 5.4 summarises the results of the bivariate analysis, which uses winsorised ΔMTB (the 3-year change in the appointing firm's market-to-book ratio). In columns (1) through (4) of Panel A, the number outside the parenthesis is the mean ΔMTB and the number inside the parenthesis is the p-value of a two tailed t-test, checking whether the mean is statistically significant from 0. In columns (5) through (7) of Panel A, the number outside the parenthesis is the difference in the respective means, and the number inside the parenthesis is the p-value of a two tailed t-test, checking whether the difference is statistically significant from 0. This latter t-test assumes an unequal variance between the two respective samples. In columns (1) through (4) of Panel B, the number outside the parenthesis is the median ΔMTB and the number inside the parenthesis is the p-value of a Wilcoxon signed-rank test, checking whether the median is statistically significant from 0. In columns (5) through (7) of Panel B, the word outside the parenthesis is the higher ranked distribution between the two respective CEO origin distributions, and the number inside the parenthesis is the p-value of a Wilcoxon-Mann-Whitney test, checking whether the two distributions are statistically different. The CEO origins and samples are defined in Appendices A.1 and A.2 respectively.

	All	**Insider**	**Grey Insider**	**Outsider**	**Difference (2) – (3)**	**Difference (2) - (4)**	**Difference (3) - (4)**
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A: Mean $\Delta MTBs$							
Sample 1	2.66% (0.638)	15.68% (0.153)	7.27% (0.571)	-6.26% (0.416)	8.41% (0.615)	21.93% (0.100)	13.53% (0.365)
Sample 2	-0.40% (0.949)	12.43% (0.308)	5.68% (0.692)	-9.60% (0.242)	6.75% (0.718)	22.03% (0.134)	15.28% (0.355)
Sample 3	0.39% (0.952)	14.45% (0.280)	7.86% (0.617)	-10.32% (0.184)	6.59% (0.747)	24.77% (0.110)	18.18% (0.300)
Panel B: Median $\Delta MTBs$ and Distribution Rankings							
Sample 1	-14.93% (0.077)	-3.90% (0.613)	0.37% (0.811)	-20.59% (0.008)	insider (0.616)	insider (0.044)	grey insider (0.208)
Sample 2	-19.70% (0.009)	-15.81% (0.862)	-4.75% (0.555)	-22.46% (0.002)	insider (0.765)	insider (0.071)	grey insider (0.232)
Sample 3	-16.25% (0.055)	-6.21% (0.683)	-1.60% (0.699)	-20.59% (0.007)	insider (0.711)	insider (0.087)	grey insider (0.274)

After the winsorising process the means and medians of $\Delta\, MTB$ remain very different, so I run some additional analysis. In columns (1) through (4) of Panel B, I display the median $\Delta\, MTBs$ of each sample and the p-values of each median. Column (1) shows that CEO appointments in general have medians between -20 and -15%, which are statistically significant at the 1% level for sample 2 and statistically significant at the 10% level for samples 1 and 3. Columns (2) though (4) suggest that outsiders are the worst performers: the medians of insiders and grey insiders are statistically insignificant, whereas the medians of outsiders (around -21%) are statistically significant at the 1% level. In the next three columns of Panel B, I compare the $\Delta\, MTB$ distributions of each CEO origin pair. Column (5) documents that insiders have higher ranked distributions than grey insiders, but the ranking differences are not statistically significant. In column (6), I discover that insiders have superior distributions to outsiders and the difference is statistically significant at the 5% level for sample 1, and statistically significant at the 10% level for samples 2 and 3. Finally, column (7) reveals no statistically significant differences between grey insiders and outsiders.

Overall, the bivariate findings dampen those of the initial analysis. The bivariate analysis provides some support for insiders outperforming outsiders, but provides no support for any other performance differences. These findings must be interpreted with caution, however, as simple bivariate comparisons do not control for factors that may be correlated with CEO origin and $\Delta\, MTB$. In the next section, I control for such factors and isolate the effect of CEO origin on $\Delta\, MTB$.

5.5 Regression Analysis

I estimate the following regressions:

$$\Delta\, MTB = a + b(INSIDER) + c(GREY) + d(EXCESS\_MTB) + e(SIZE) + f(INDUSTRY) + g(MARKET) + h(REGULATED) + \varepsilon \quad (5.1)$$

$$\Delta\, MTB = a + b(OUTSIDER) + c(GREY) + d(EXCESS\_MTB) + e(SIZE) + f(INDUSTRY) + g(MARKET) + h(REGULATED) + \varepsilon \quad (5.2)$$

INSIDER, GREY, and OUTSIDER are dummy variables, which are set equal to 1 if the appointment is an insider, grey insider, or outsider respectively, and 0 otherwise; the CEO origin classification is outlined in section 3.2. (5.1) gives the performance of insiders and grey insiders relative to outsiders, whereas (5.2) gives the performance of outsiders and grey insiders relative to insiders; estimating

(5.1) and (5.2) ensures that each CEO origin is compared with the other two. I estimate (5.1) and (5.2) with OLS and adjust the standard errors for within firm correlation.

5.5.1 Control Variables

EXCESS_MTB measures the appointing firm's initial MTB ratio relative to those of other firms in the same industry. Specifically, EXCESS_MTB is the residual (i.e., ε) in the following OLS regression:

$$MTB_{initial} = a + b(INDUSTRY) + \varepsilon$$

where $MTB_{initial}$ and INDUSTRY are the firm's initial MTB ratio (see section 5.1) and industry (see section 4.4.1) respectively. I control for EXCESS_MTB because CEOs who inherit struggling (i.e., low EXCESS_MTB) firms may have greater scope to improve firm prospects, and because shares of low MTB firms have outperformed those of high MTB firms (Fama & French, 1992). EXCESS_MTB is also likely correlated with CEO origin. As explained in section 4.4.1, thriving (i.e., high EXCESS_MTB) firms hire more insiders and struggling firms hire more outsiders (e.g., Agrawal et al., 2006; Ang & Nagel, 2009; Parrino, 1997).

SIZE measures the appointing firm's size (see section 4.4.1). I control for SIZE because shares of smaller firms have outperformed those of larger firms (Fama & French, 1992); and because smaller firms have less insider candidates and so are more likely to hire outsider candidates (e.g., Agrawal et al., 2006; Dalton & Kesner, 1983; Lauterbach et al., 1999; Parrino, 1997).

As defined in section 4.4.1, INDUSTRY indicates the appointing firm's industry at the time of the appointment announcement. I control for INDUSTRY because unexpected changes in industry conditions - which are out of a CEO's control - can change the future prospects of a firm. INDUSTRY may also be correlated with CEO origin. Different industries may seek different levels of specific and generic skills and hence favour different CEO origins. Also, Parrino (1997) finds that more competitive industries hire more outsiders.

MARKET measures the share market's return over the CEO's performance period. MARKET is the real return of the NZX All Index (i.e., NZX All return minus CPI percentage change) measured over the period of $\Delta\ MTB_j$. MARKET is used as a control because unexpected changes in market conditions - which are out of a CEO's control - can change the future prospects of a firm. It is unclear (ex-ante)

how MARKET is correlated with CEO origin, but it is possible that each CEO origin is more prevalent in different market conditions.

REGULATED is a dummy variable that equals 1 if the firm is regulated at the time of the appointment announcement, and 0 otherwise. I control for REGULATED because unexpected changes in regulatory conditions - which are out of a CEO's control - can change the future prospects of a firm. I also control for REGULATED because regulated and unregulated firms may be systematically different, causing them to favour CEOs from different origins. For example, firms that operate in complex regulatory environments may favour experienced insiders.

Table 5.5: Summary Statistics of the Control Variables

Table 5.5 presents the summary statistics of the control variables. The summary statistics are based on the entire thesis sample rather than the more restricted samples of this chapter. I do not show the summary statistics of SIZE and INDUSTRY because they are presented in Table 4.4. The CEO origins and control variables are defined in Appendix A.1.

	# Obs	Mean	Median	Stdev	Minimum	Maximum
EXCESS_MTB						
All	161	0.00	-0.40	2.42	-3.88	17.48
Insiders	42	0.26	-0.51	3.42	-1.96	17.48
Grey Insiders	38	0.04	-0.36	2.84	-3.88	11.35
Outsiders	81	-0.15	-0.29	1.39	-2.02	4.76
MARKET						
All	162	10%	9%	30%	-41%	90%
Insiders	42	11%	10%	31%	-33%	72%
Grey Insiders	38	13%	9%	30%	-39%	74%
Outsiders	82	8%	8%	30%	-41%	90%
REGULATED						
All	162	6% REGULATED and 94% UNREGULATED				
Insiders	42	5% REGULATED and 95% UNREGULATED				
Grey Insiders	38	8% REGULATED and 92% UNREGULATED				
Outsiders	82	6% REGULATED and 94% UNREGULATED				

Table 5.5 presents the summary statistics of the control variables. The summary statistics are based on the entire thesis sample rather than the more restricted samples of this chapter. I do not show the summary statistics for SIZE and INDUSTRY because they are presented in Table 4.4. In the EXCESS_MTB row, I find mixed support for the argument that outsiders inherit firms with low industry-adjusted MTB ratios: outsiders have the lowest mean EXCESS_MTB, but have the highest median EXCESS_MTB. This discrepancy may be explained by the low maximum EXCESS_MTB of outsiders. The MARKET row shows that the real return of the share market over the CEO

performance period averages around 10%, and that there are only small MARKET differences between CEO origins. The REGULATED statistics show that around 6% of firms are regulated, and that there are no marked REGULATED differences between CEO origins.

5.5.2 Regression Results

Before presenting the regression results, I check for multicollinearity. I calculate the correlations between each pair of independent variables and display the results for sample 1 in Table 5.6; I do not display the correlation tables of samples 2 and 3 as they are similar to Table 5.6. Table 5.6 shows that the independent variables are not highly correlated with each other, so multicollinearity is not a problem. The highest correlation is 0.60 between ENERGY and REGULATED.

Table 5.7 summarises the regression results. In columns (1) through (3), I present the coefficient estimates and p-values of the INSIDER, GREY, and OUTSIDER variables. In column (1), there is some evidence that insiders outperform outsiders: the sample 1 and sample 3 differentials, 23% and 36%, are statistically significant at the 10% and 5% levels respectively; whereas the sample 2 differential is not statistically significant. So, the difference is only significant in the samples that credit CEOs with their firms being taken over. This performance difference contrasts the findings of comparable studies: Ang and Nagel (2009) find no significant difference when using Tobin's q as a performance measure, and Falato and Kadyrzhanova (2012) find significant differences in favour of outsiders when using Tobin's q. In columns (2) and (3), I find no statistically significant differences between grey insiders and outsiders and between grey insiders and insiders.

Table 5.8 presents the full regression outputs of equation (5.1); those of equation (5.2) are omitted as they do not add anything new except the performance of grey insiders relative to outsiders which is documented in Table 5.7. EXCESS_MTB's coefficients are negative, which is as expected. They are statistically significant at the 5% level for sample 1 and at the 10% level for samples 2 and 3. SIZE also has negative coefficients as predicted, but they cannot be statistically distinguished from 0. None of the INDUSTRY dummy variables are statistically significant. As expected, MARKET is economically and statistically significant: a one percentage point increase in MARKET leads to the same increase in $\Delta\, MTB$, a finding that is statistically significant at the 1% level across all samples. REGULATED's coefficients are positive but cannot be statistically distinguished from 0. The regressions have an average R-squared of around 0.27.

Table 5.6: Correlations between Independent Variables

Table 5.6 shows the correlations between the independent variables of sample 1. The correlation tables of samples 2 and 3 are similar to Table 5.6. The independent variables and samples are defined in Appendices A.1 and A.2 respectively.

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
1. INSIDER	1.00											
2. GREY	-0.33	1.00										
3. OUTSIDER	-0.60	-0.56	1.00									
4. EXCESS_MTB	0.06	0.01	-0.06	1.00								
5. SIZE	0.12	0.12	-0.21	-0.13	1.00							
6. PRIMARY	0.07	-0.09	0.01	0.00	0.10	1.00						
7. ENERGY	-0.06	0.11	-0.04	0.00	0.25	-0.16	1.00					
8. GOODS	0.03	-0.12	0.07	0.00	-0.27	-0.18	-0.13	1.00				
9. PROPERTY	-0.04	0.10	-0.05	0.00	0.12	-0.13	-0.09	-0.10	1.00			
10. SERVICES	0.01	-0.08	0.06	0.00	0.01	-0.46	-0.31	-0.35	-0.24	1.00		
11. MARKET	0.01	0.07	-0.07	-0.03	0.07	-0.12	0.05	0.12	0.06	-0.03	1.00	
12. REGULATED	-0.04	0.04	0.00	0.15	0.21	-0.13	0.60	-0.10	-0.07	-0.14	-0.02	1.00

Table 5.7: Summarised Regression Results

Table 5.7 summarises the results of the regression analysis. Equations (5.1) and (5.2) are estimated using OLS and the standard errors are adjusted for within firm correlation. The dependent variable is the winsorised ΔMTB (the 3-year change in the appointing firm's market-to-book ratio). The independent variables of interest are INSIDER, GREY, and OUTSIDER. The control variables are EXCESS_MTB, SIZE, INDUSTRY, MARKET and REGULATED. In columns (1) through (3), the number outside the parenthesis is the coefficient of INSIDER in equation (5.1), GREY in equation (5.1), and GREY in equation (5.2) respectively; and the number inside the parentheses is the p-value of a two tailed t-test, checking whether the coefficient is statistically significant from 0. The variables and samples are defined in Appendices A.1 and A.2 respectively.

	INSIDER relative to OUTSIDER	**GREY relative to OUTSIDER**	**GREY relative to INSIDER**
	(1)	(2)	(3)
Sample 1	22.93% (0.087)	7.14% (0.609)	-15.78% (0.216)
Sample 2	20.94% (0.152)	4.19% (0.787)	-16.75% (0.229)
Sample 3	36.21% (0.014)	12.55% (0.425)	-23.66% (0.191)

I also re-estimate the above regressions without MARKET. The rationale for doing so is as follows: (i) it is possible that MARKET is too good a control, masking the variation in ΔMTB, and spuriously causing insignificant CEO origin coefficients; and (ii) it is not intuitively obvious how MARKET is correlated with CEO origin, so MARKET's exclusion may not lead to omitted variable bias. After re-running the regressions there is one significant change in the results: sample 3's insider-outsider difference is now only significant at the 10% level as opposed to the 5% level. There are also a couple of minor changes. First and not surprisingly, the regressions now have much lower R-squared figures: 0.07 versus 0.27. And second, the EXCESS_MTB coefficients are no longer statistically significant at conventional levels. In summary, the results are not significantly altered: there is still some support for insiders outperforming outsiders, but no support for any other performance differences.

Table 5.8: Full Regression Results

Table 5.8 presents the full regression outputs of equation (5.1); those of equation (5.2) are omitted as they do not add anything new except the performance of grey insiders relative to outsiders which is documented in Table 5.7. Equation (5.1) is estimated using OLS and the standard errors are adjusted for within firm correlation. Equation (5.1)'s dependent variable is the winsorised ΔMTB (the 3-year change in the appointing firm's market-to-book ratio). The independent variables of interest are INSIDER and GREY. The control variables are EXCESS_MTB, SIZE, INDUSTRY (five dummy variables), MARKET, and REGULATED. The number outside the parenthesis is the coefficient estimate and the number inside the parentheses is the p-value of a two tailed t-test, checking whether the coefficient is statistically significant from 0. The variables and samples are defined in Appendices A.1 and A.2 respectively.

	Sample 1	**Sample 2**	**Sample 3**
INTERCEPT	24.01% (0.589)	26.35% (0.557)	39.31% (0.448)
INSIDER	22.93% (0.087)	20.94% (0.152)	36.21% (0.014)
GREY	7.14% (0.609)	4.19% (0.787)	12.55% (0.425)
EXCESS_MTB	-4.75% (0.033)	-4.33% (0.051)	-4.49% (0.082)
SIZE	-6.93% (0.367)	-6.85% (0.379)	-13.12% (0.131)
PRIMARY	17.00% (0.567)	13.02% (0.672)	24.17% (0.416)
ENERGY	8.06% (0.797)	5.90% (0.852)	12.36% (0.700)
GOODS	-37.43% (0.195)	-42.52% (0.155)	-29.96% (0.347)
PROPERTY	-6.13% (0.829)	-6.18% (0.831)	16.71% (0.591)
SERVICES	-6.36% (0.823)	-11.10% (0.708)	12.63% (0.684)
MARKET	109.49% (0.000)	110.88% (0.000)	98.39% (0.000)
REGULATED	23.58% (0.292)	20.87% (0.352)	33.92% (0.140)
# Obs	161	145	110
R-squared	0.2695	0.2669	0.2695

5.6 Selection Bias

In this section, I investigate whether the above results are robust to selection bias. The first subsection presents a simple econometric model that highlights the intuition and mechanisms of selection bias, and a two-step procedure that (theoretically) removes this bias. The second subsection discusses the findings of the two-step procedure.

5.6.1 Econometrics of Selection Bias

To keep the econometrics simple, I assume that there are only two CEO origins. I consider insiders and outsiders as an example. The model has a primary equation, which compares the performance of insiders and outsiders:

$$\Delta\, MTB = \ a + b(D) + \boldsymbol{c}(\boldsymbol{X}) + \ \mu \qquad (5.3)$$

where D is a dummy variable that is equal to 1 if the appointed CEO is an insider and 0 otherwise; and X is the vector of control variables used in equation (5.2). The performance of insiders relative to outsiders is given by the coefficient *b*.

The model also has a selection equation, which predicts whether the appointed CEO is an insider or outsider:

$$D^* = \alpha \ + \boldsymbol{\gamma}(\boldsymbol{Z}) + \varepsilon \qquad (5.4)$$

where D* is a latent variable and Z is a vector of observable variables that predict CEO origin. The relationship between D and D* is governed by

$$D = \begin{cases} 1, & if\ D^* \geq 0 \\ 0, & otherwise \end{cases}$$

Equations (5.3) and (5.4) are connected via their error terms, which are assumed to have a bivariate normal distribution with mean zero and covariance matrix,

$$\begin{bmatrix} \sigma^2 & \rho\sigma \\ \rho\sigma & 1 \end{bmatrix} \qquad (5.5)$$

If the error terms μ and ε are correlated (i.e., ρ is not equal to 0), then E($\mu\ |D$) is not equal to 0 and the OLS estimate of b is endogenous and hence biased and inconsistent. Intuitively, if there are unobservable factors that increase the chance of a low $\Delta\, MTB$ and of an outsider appointment, then the previous section's OLS findings are misleading: the poor performance of outsiders is not necessarily attributable to their outsider characteristics, but rather to their "selected" firm's unobservable poor prospects. For example, directors may systematically select outsiders when they

know that firm prospects are poor - poorer than perhaps investors realise. As a result, the performance of outsiders may reflect not only their own actions but also their firm's poor prospects; the performance of outsiders may be biased downwards. Put differently, how would insiders perform if they were selected by these same firms? Perhaps they would perform even worse than outsiders; perhaps selection bias is masking the inferior performance of insiders.

To make this intuition more concrete, consider the expected value of performance when the CEO is an insider:

$$E(\Delta\, MTB \mid D = 1) = \; a + b + \boldsymbol{c}(\boldsymbol{X}) + \;\; E(\mu \mid D = 1)$$

Using (5.5) and the properties of truncated binormal distributions, it follows that

$$E(\mu \mid D = 1) = \; \rho\sigma \frac{\phi(\boldsymbol{\gamma Z})}{\Phi(\boldsymbol{\gamma Z})}$$

where ϕ and Φ are the density and cumulative functions of the standard normal respectively (Greene, 2003 p. 759 and 788).

Similarly, the expected value of performance when the CEO is an outsider is

$$E(\Delta\, MTB \mid D = 0) = \; a + \boldsymbol{c}(\boldsymbol{X}) + \;\; E(\mu \mid D = 0)$$

In this case,

$$E(\mu \mid D = 0) = \; \rho\sigma \frac{-\phi(\boldsymbol{\gamma Z})}{1 - \Phi(\boldsymbol{\gamma Z})}$$

So, the average performance difference between insiders and outsiders is

$$E(\Delta\, MTB \mid D = 1) - \; E(\Delta\, MTB \mid D = 0) = b + \; \rho\sigma \frac{\phi(\boldsymbol{\gamma Z})}{\Phi(\boldsymbol{\gamma Z})\big(1 - \Phi(\boldsymbol{\gamma Z})\big)} \qquad (5.6)$$

The right-hand-side of equation (5.6) is the OLS estimate of *b* in equation (5.3). This estimate is made up of two terms: the first is the true performance difference between insiders and outsiders; and the

second is the selection bias due to unobservable factors. The OLS estimate is biased downwards if ρ is negative and biased upwards if ρ is positive. As alluded to above, I suspect that ρ is positive: the previous section's OLS finding may overstate the performance of insiders relative to outsiders.

To correct for this bias, researchers employ a treatment effects model that is based on Heckman (1979)'s two-step procedure (Maddala, 1983).[28] The first step estimates the selection equation, equation (5.4), with a binary probit model. The associated estimates are then used to compute a hazard variable,

$$\lambda = \begin{cases} \dfrac{\phi(\widehat{\boldsymbol{\gamma}}\boldsymbol{Z})}{\Phi(\widehat{\boldsymbol{\gamma}}\boldsymbol{Z})}, & if\ D = 1 \\ \dfrac{-\phi(\widehat{\boldsymbol{\gamma}}\boldsymbol{Z})}{1 - \Phi(\widehat{\boldsymbol{\gamma}}\boldsymbol{Z})}, & if\ D = 0 \end{cases} \tag{5.7}$$

which is commonly referred to as the inverse Mills ratio. The second step estimates the primary equation, equation (5.3), with the inverse Mills ratio added as a control variable. In theory, the inverse Mills ratio controls for selection bias so that $E(\mu \mid D)$ is now equal to 0 and the estimate of b is exogenous and hence unbiased and consistent. A statistically significant inverse Mills ratio coefficient indicates that selection bias is present in the previous section's OLS estimates. This method of controlling for selection bias is commonly used in the corporate finance literature (e.g., Ang & Nagel, 2009; Boyle & Roberts, 2013; Campa & Kedia, 2002; Chen, Lin, & Yi, 2008; Tucker, 2010).

5.6.2 Two-Step Results

The two-step procedure, as laid out above, assumes that there is only one CEO origin dummy variable. In the previous section's OLS regressions, however, there are two CEO origin dummy variables. Unfortunately, I do not know how to extend the two-step procedure to the two dummy variable case, so I compromise on the one dummy variable case.[29] I use one dummy variable by partitioning each of this chapter's samples into three subsamples: the first contains insider and

[28] Lennox, Francis, and Wang (2011) and Tucker (2010) provide recent reviews of the treatment effects model.

[29] It is possible to implement the two-step procedure with two CEO origin dummy variables. According to Tucker (2010, p.45), the first step estimates a multinomial logit model; the associated estimates are then used to form ratios that are not inverse Mills ratios; and these ratios are added as control variables to the second step regression. Unfortunately, I cannot find the formulas for such ratios so cannot proceed with this method.

outsider appointments; the second contains grey insider and outsider appointments; and the third contains grey insider and insider appointments.

Using these subsamples, I estimate the first step regression:

$$CEO\_ORIGIN = \alpha + \gamma_1(SIZE) + \gamma_2(INDUSTRY) + \gamma_3(PRIOR) + \gamma_4(PERIOD) + \gamma_5(BOARD\_DEP) + \gamma_6(AB\_RETURN) + \epsilon \quad (5.8)$$

where CEO_ORIGIN is equal to INSIDER in the first subsample, and GREY in the other two subsamples; and INSIDER and GREY are defined in section 5.5. Equation (5.8) is estimated with a binary probit model and the standard errors are adjusted for within firm correlation. Equation (5.8) is, however, only estimated over the subsamples of sample 1; the AB_RETURN variable is not available for 44 appointments so the subsamples of samples 2 and 3 become too small.[30] Equation (5.8) is also estimated without AB_RETURN over the subsamples of samples 1, 2, and 3.

The first explanatory variable in equation (5.8) is SIZE which measures the appointing firm's size (see section 4.4.1). I use SIZE because smaller firms have less insider candidates and so are more likely to hire outsider candidates (e.g., Agrawal et al., 2006; Dalton & Kesner, 1983; Lauterbach et al., 1999; Parrino, 1997). The next explanatory variable is INDUSTRY which indicates the appointing firm's industry at the time of the appointment announcement (see section 4.4.1).[31] INDUSTRY is important because different industries may seek different levels of specific and generic skills and hence favour different CEO origins. Also, Parinno (1997) finds that more competitive industries hire more outsiders. PRIOR measures the appointing firm's performance prior to the appointment announcement (see section 4.4.1). Several studies find that thriving firms hire more insiders and struggling firms hire more outsiders (e.g., Agrawal et al., 2006; Ang & Nagel, 2009; Parrino, 1997).

Equation (5.8) also includes PERIOD which roughly indicates the year of the CEO's starting date. PERIOD consists of five dummy variables that are based on 3-year blocks: 1991 to 1993 (PERIOD1),

[30] There is another reason to not use the subsamples of sample 3. After the AB_RETURN restrictions, sample 1 and sample 3 are similar: sample 1 equals sample 3 plus eight appointments (two insiders, three grey insiders, and three outsiders).

[31] The PROPERTY dummy variable is excluded from two of the without AB_RETURN regressions: sample 3's insider and outsider subsample and grey insider and insider subsample. I exclude PROPERY from these regressions because they only have two or three appointments from the property industry.

1994 to 1996 (PERIOD2), 1997 to 1999 (PERIOD3), 2000 to 2002 (PERIOD4), 2003 to 2005 (PERIOD5), and 2006 to 2008 (PERIOD6, the excluded dummy).[32] I use 3-year blocks instead of 1-year blocks to preserve degrees of freedom in the regressions. I control for PERIOD because each CEO origin is more prevalent in different periods (as shown in section 3.3). BOARD_DEP measures the dependence of the appointing firm's board of directors. BOARD_DEP is the proportion of directors who are firm executives at the time of the CEO appointment announcement. Several studies find that the likelihood of an insider appointment increases as board dependence increases (e.g., Boeker and Goodstein, 1993; Borokhovich, Parrino, and Trapani, 1996; Dahya and McConnell, 2005; Huson, Parrino, and Starks, 2001). Finally, AB_RETURN is the winsorised 1-day appointment announcement abnormal return from sample 1 of Chapter 4 (see sections 4.1 and 4.2). As shown in section 4.3, AB_RETURN has a significant positive correlation with outsider appointments, an insignificant correlation with insider appointments, and a somewhat significant negative correlation with grey insider appointments.

For a reliable implementation of the two-step procedure, some of the above variables need to be excluded from the second step regression (Lennox et al., 2011). The excluded variables are ideally highly correlated with CEO origin and independent of ΔMTB. I hope that BOARD_DEP and AB_RETURN will satisfy these two conditions. As discussed above, these variables should be correlated with CEO origin. Also, BOARD_DEP should be independent of ΔMTB because (in theory) it is priced into the firm's initial MTB ratio. And AB_RETURN should not have a large influence on ΔMTB because the random walk version of the efficient market hypothesis suggests that returns should be independent over time. However, the AB_RETURN and ΔMTB periods do overlap, which may lead to some dependence. So, I subtract AB_RETURN from ΔMTB when AB_RETURN is used in the first step regression.

Table 5.9 presents the full regression outputs of equation (5.8). Panels A and B show the outputs with and without AB_RETURN respectively, and columns (1) through (3) display the marginal effects and p-values of each explanatory variable.[33, 34] The SIZE row shows that bigger firms are, as expected, more likely to select an insider or grey insider over an outsider; the marginal effects are

[32] The PERIOD1 dummy variable is excluded from the following regressions: the insider and outsider subsamples and the grey insider and insider subsamples. I exclude PRIOR1 from these regressions because they only have two or three appointments from the 1991 to 1993 period.

[33] Specifically, Panel B displays the outputs of the subsamples of sample 1; those of the subsamples of samples 2 and 3 are not displayed as they are similar to Panel B.

Table 5.9: First Step Results

Table 5.9 presents the regression outputs of equation (5.8). Panels A and B show the outputs with and without AB_RETURN respectively. Panel B displays the outputs of the subsamples of sample 1; those of the subsamples of samples 2 and 3 are not displayed as they are similar to Panel B. Equation (5.8) is estimated using a binary probit model and the standard errors are adjusted for within firm correlation. The dependent variable is CEO_ORIGIN, which equals INSIDER, GREY, and GREY for columns (1), (2), and (3) respectively. The explanatory variables are SIZE, INDUSTRY (five dummy variables), PRIOR, PERIOD (five dummy variables), BOARD_DEP, and AB_RETURN. The number outside the parenthesis is the marginal effect estimate and the number inside the parentheses is the p-value of a two tailed t-test, checking whether the *probit coefficient* is statistically significant from 0 (i.e., the p-value is from the probit regression output rather than the marginal effects output). The intercept is not shown because it does not have a marginal effect. The variables and samples are defined in Appendices A.1 and A.2 respectively.

	INSIDER relative to OUTSIDER	**GREY relative to OUTSIDER**	**GREY relative to INSIDER**
	(1)	(2)	(3)
Panel A: With AB_RETURN			
SIZE	22.88% (0.000)	13.71% (0.020)	0.50% (0.953)
PRIMARY	-3.69% (0.886)	-31.99% (0.054)	-22.90% (0.365)
ENERGY	5.71% (0.848)	-21.39% (0.254)	-16.26% (0.595)
GOODS	21.85% (0.397)	-31.22% (0.015)	-30.95% (0.197)
PROPERTY	-27.56% (0.368)	-28.31% (0.089)	3.22% (0.913)
SERVICES	-2.90% (0.912)	-42.24% (0.003)	-27.55% (0.212)
PRIOR	-7.34% (0.551)	-9.42% (0.402)	-13.77% (0.322)
PERIOD1	NA	9.38% (0.518)	NA
PERIOD2	32.20% (0.071)	11.11% (0.461)	-1.08% (0.960)
PERIOD3	16.35% (0.274)	21.56% (0.189)	7.05% (0.722)
PERIOD4	2.10% (0.900)	25.66% (0.058)	27.02% (0.163)
PERIOD5	21.07% (0.077)	10.45% (0.441)	-14.20% (0.463)
BOARD_DEP	49.85% (0.202)	12.24% (0.710)	-20.45% (0.612)
AR	-545.00% (0.031)	-731.01% (0.001)	-303.40% (0.253)
# Obs	87	89	60
Sensitivity, Specificity	48%, 86%	68%, 92%	65%, 76%

[34] The marginal effects are calculated by setting all other right-hand-side variables to their mean values. The p-values are from the probit regression outputs rather than the marginal effects outputs.

Panel B: Without AB_RETURN (sample 1)			
SIZE	14.84% (0.003)	10.51% (0.069)	1.25% (0.859)
PRIMARY	-6.11% (0.828)	-49.69% (0.003)	-43.87% (0.065)
ENERGY	-18.53% (0.552)	-34.16% (0.100)	-17.06% (0.548)
GOODS	-2.13% (0.937)	-56.50% (0.001)	-52.39% (0.024)
PROPERTY	-24.73% (0.436)	-31.26% (0.115)	-13.24% (0.642)
SERVICES	-11.42% (0.667)	-47.05% (0.004)	-38.77% (0.058)
PRIOR	1.38% (0.891)	-11.97% (0.310)	-19.25% (0.162)
PERIOD1	NA	18.58% (0.303)	NA
PERIOD2	10.93% (0.494)	6.52% (0.601)	5.54% (0.772)
PERIOD3	8.71% (0.523)	12.82% (0.348)	6.59% (0.698)
PERIOD4	7.78% (0.584)	27.21% (0.016)	21.04% (0.185)
PERIOD5	21.57% (0.038)	8.85% (0.428)	-16.96% (0.283)
BOARD_DEP	17.88% (0.633)	18.11% (0.603)	18.37% (0.606)
# Obs	123	119	80
Sensitivity, Specificity	31%, 90%	42%, 93%	63%, 79%

economically and statistically significant. Some of the INDUSTRY dummy variables are statistically significant, especially in the grey insider and outsider subsamples. In the PRIOR row, I discover a surprising result: better performing firms are more likely to hire outsiders. The PRIOR marginal effects cannot, however, be statistically distinguished from zero. The occasional PERIOD dummy variable is statistically significant. The BOARD_DEP row shows that more dependent boards are, as expected, more likely to choose an insider or grey insider over an outsider. Unfortunately, the marginal effects are statistically insignificant so BOARD_DEP is a weak excluded variable. The AB_RETURN marginal effects confirm the correlations of section 4.3. AB_RETURN is highly correlated with CEO origin and so satisfies the first property of a strong excluded variable. The regressions with AB_RETURN have an average sensitivity and specificity of around 60% and 85% respectively; and the regressions without AB_RETURN have averages of around 45% and 87% respectively.

I now estimate the second step regression:

$$\Delta MTB^* = a + b(CEO\_ORIGIN) + c_1(EXCESS\_MTB) + c_2(SIZE) + c_3(INDUSTRY) + c_4(MARKET) + c_5(REGULATED) + c_6(\lambda) + \mu \quad (5.9)$$

where ΔMTB^* is equal to winsorised ΔMTB minus AB_RETURN if AB_RETURN is used in the first step regression, and winsorised ΔMTB otherwise. CEO_ORIGIN is equal to INSIDER in the first subsample, and GREY in the other two subsamples. λ is the inverse Mills ratio given by equation (5.7), and the other control variables are defined in section 5.5.1. I estimate (5.9) using OLS and adjust the standard errors for within firm correlation.

Table 5.10 summarises the regression outputs of equation (5.9). Panels A and B show the outputs with and without the use of AB_RETURN in the first step respectively. Within each panel, the "Without λ" row shows the CEO_ORIGIN coefficients when λ is excluded from equation (5.9); the "With λ" row shows the CEO_ORIGIN coefficients when λ is included; and the "λ" row shows the λ coefficients when λ is included. In column (1), I discover that the inclusion of λ leads to perplexing results for the insider and outsider subsample. With AB_RETURN, the performance gap between insiders and outsiders widens by around 60 percentage points but becomes less statistically significant (from the 1% to the 10% level). However, without AB_RETURN, the performance gap moves in the opposite direction by approximately 40 and 100 percentage points for samples 1 and 2 respectively; these new coefficient estimates remain statistically insignificant though. Also, without AB_RETURN, the performance gap widens by 100 percentage points for sample 3 and remains statistically significant at the 5% level. These large and conflicting swings raise concerns about the reliability of the two-step results.

Column (2) shows that the inclusion of λ generally widens the performance gap between grey insiders and outsiders by around 10 to 15 percentage points, except in the case of sample 2 where the gap widens by 54 percentage points - another wild swing. The performance difference remains statistically insignificant though. In column (3), I observe less volatile swings. With AB_RETURN, the performance gap between insiders and grey insiders widens by only 4 percentage points and remains statistically insignificant. Without AB_RETURN, the gap shrinks by around 10 to 25 percentage points depending on the sample and remains statistically insignificant. In columns (1) through (3), the λ coefficients are statistically insignificant, which provides some evidence that selection bias is not present in the previous section's OLS findings.

Table 5.10: Second Step Results

Table 5.10 summarises the regression outputs of equation (5.9). Panels A and B show the outputs with and without the use of AB_RETURN in the first step respectively. Equation (5.9) is estimated using OLS and the standard errors are adjusted for within firm correlation. The dependent variables is ΔMTB^*, which equals winsorised ΔMTB minus AB_RETURN if AB_RETURN is used in the first step regression, and winsorised ΔMTB otherwise. The independent variable of interest is CEO_ORIGIN, which equals INSIDER, GREY, and GREY in columns (1), (2), and (3) respectively. The control variables are EXCESS_MTB, SIZE, INDUSTRY (five dummy variables), MARKET, REGULATED, and λ (the inverse Mills ratio). The "Without λ" rows show the CEO_ORIGIN outputs when λ is excluded from equation (5.9); the "With λ" rows show the CEO_ORIGIN outputs when λ is included; and the "λ" rows show the λ outputs when λ is included. The R-squared numbers refer to the regressions with λ. The number outside the parenthesis is the coefficient estimate and the number inside the parentheses is the p-value of a two tailed t-test, checking whether the coefficient is statistically significant from 0. The variables and samples are defined in Appendices A.1 and A.2 respectively.

	INSIDER relative to OUTSIDER	**GREY relative to OUTSIDER**	**GREY relative to INSIDER**
	(1)	(2)	(3)
Panel A: With AB_RETURN			
Without λ	35.74% (0.010)	14.85% (0.317)	-26.22% (0.142)
With λ	95.76% (0.071)	29.84% (0.306)	-30.71% (0.567)
λ	-42.84% (0.246)	-11.08% (0.577)	3.02% (0.930)
# Obs, R-squared	87, 0.244	89, 0.2824	60, 0.3916
Panel B: Without AB_RETURN			
Sample 1			
Without λ	21.22% (0.110)	7.63% (0.594)	-18.37% (0.163)
With λ	-20.56% (0.796)	17.96% (0.727)	-5.36% (0.905)
λ	26.12% (0.592)	-6.54% (0.818)	-8.70% (0.754)
# Obs, R-squared	123, 0.2411	119, 0.2777	80, 0.361
Sample 2			
Without λ	19.85% (0.169)	3.42% (0.831)	-17.62% (0.234)
With λ	-80.52% (0.321)	10.11% (0.821)	-5.54% (0.888)
λ	62.46% (0.207)	-4.38% (0.869)	-8.39% (0.738)
# Obs, R-squared	111, 0.2284	108, 0.2716	71, 0.3717
Sample 3			
Without λ	31.68% (0.032)	10.83% (0.499)	-26.85% (0.195)
With λ	139.04% (0.050)	64.53% (0.157)	-1.36% (0.980)
λ	-69.17% (0.129)	-36.37% (0.222)	-17.38% (0.595)
# Obs, R-squared	82, 0.2203	83, 0.2722	55, 0.3756

Overall, the inclusion of λ does not change the statistical significance of the performance gaps but does change, and in some cases markedly, the magnitude of these gaps. As mentioned above, the wild swings in magnitude make me sceptical about the reliability of the two-step results. I concede that I may not have controlled for selection bias; perhaps my excluded variables are not strong enough. I heed the advice of Lennox et al. (2011) who review the two-step procedure and recommend that researchers,

> *be more careful and rigorous in our implementation of selection models, particularly in the choice of exclusion restrictions. Further, because of the inherent limitations and fragility of selection models, we should also be much more circumspect with respect to claims about ‘‘controlling for selection bias.’’ (p. 590)*

6 Lasting at Least Three Years

In this chapter, I examine the relationship between CEO origin and the likelihood of lasting at least three years in the job. Before doing this examination, I explain the rationale and measurement of the above likelihood, outline the sample selection for this chapter's analysis, and present some summary statistics and graphs of CEO tenure.

6.1 Rationale and Measurement

In the two previous chapters, the performance measures focus on shareholder wealth creation. For completeness, I analyse performance from another angle: does the CEO form a good or bad match with the firm? Following earlier studies (e.g., Allgood & Farrell, 2003; Zhang, 2008), I define a good match as a CEO who lasts at least three years in the job. CEOs who leave quickly are costly to the firm: before being replaced the firm probably performs poorly; and when replaced the firm faces disruption costs, which include coping with unstable and discontinuous leadership, paying severance remuneration, searching for and training the replacement CEO, and dealing with public scrutiny (e.g., why did the CEO leave so soon?, does the firm have a toxic culture?, are the directors incompetent?, etc.).[35] Of course, it would be unfair to classify all early leavers as bad matches because sometimes CEOs leave for reasons that are out of their control. I deal with such cases in the next section.

$MATCH$ measures the likelihood that the CEO will last at least three years in the job, and is defined as follows:

$$MATCH = \begin{cases} 1 & if\ (leaving\ date - starting\ date) \geq 3\ years \\ 0 & if\ (leaving\ date - starting\ date) < 3\ years \end{cases}$$

where 1 and 0 indicate good and bad matches respectively. The CEO's starting and leaving dates are found using the process described in Appendix A.4.

[35] Taylor (2010) finds that disruption costs (for firing a CEO) are significant: the cost to shareholders is around 1.3% of the firm's total assets.

6.2 Sample Selection

I start with the 162 CEO appointments and sequentially put each appointment through the following criteria:

(i) There must be sufficient information to measure $MATCH$. Sometimes I cannot measure $MATCH$ when the firm delists (within the CEO's first three years) and still employs the CEO at the time of delisting.[36] This situation is problematic as delisted firms have no obligation to inform the public of CEO changes, so sometimes I cannot tell whether the CEO lasts three years or not (despite checking Factiva, Google, and the NZ Companies Office website). Measuring $MATCH$ is particularly difficult when a firm delists due to takeover; I now also need to determine whether the CEO is the top executive (i.e., still in the job) or just a senior executive of the merged company (i.e., out of the job).[37] Overall this criterion reduces the sample by 13 appointments (3 insiders, 4 greys, and 6 outsiders).

(ii) The initial plan must be to employ the CEO for at least three years. Specifically, the appointment announcement must not state anything to the contrary. This criterion ensures that CEOs who leave early are bad matches as opposed to good matches who always planned to leave. I do not need to worry about CEOs who always planned to retire - yet did not mention it in their appointment announcements - because no early leavers used retirement as the reason for leaving. This criterion reduces the sample by one appointment (a grey insider).[38]

(iii) The reason for leaving within three years must be non-health related. This criterion ensures that CEOs who leave early are bad matches as opposed to unlucky good matches who got sick or died. This criterion reduces the sample by one appointment (an outsider).

(iv) The reason for leaving within three years must be linked to the CEO. A couple of grey areas are as follows:

   a. The CEO leaves because his firm is partially (> 33% ownership) or fully taken over. An argument for keeping these appointments in the sample: the CEO may have run the company so poorly that acquirers believe they can buy it cheaply, replace the

[36] If the firm delists due to receivership, I assume that the CEO loses his job at delisting.

[37] For the appointed CEOs that fail (i), all but one of their firms delist due to a takeover by a non-NZX firm. Finding $MATCH$ information is much harder for non-NZX firms.

[38] The excluded grey insider is Steven Joyce who, according to his appointment announcement, always planned to leave Jasons Travel Media for politics.

management, and run it more efficiently (i.e., the CEO is a bad match and appropriately $MATCH$ equals 0). Arguments for excluding these appointments: firstly, the CEO may have deliberately and brilliantly positioned the company to be taken over, extracting a takeover premium, but is then replaced by the acquirer's existing managers (i.e., the CEO is a good match and inappropriately $MATCH$ equals 0); and secondly, it is plausible that the takeover is driven by other factors, such as strategic considerations or desirable market conditions, and has nothing (or very little) to do with the CEO. To rule out these latter arguments, I exclude CEOs who leave early because of takeovers (an insider, three grey insiders, and seven outsiders).[39]

b. The CEO leaves because he has finished restructuring the firm. An argument for keeping these appointments in the sample: it is possible that the CEO is a bad match and the directors use the "restructuring complete" line as a face-saving excuse to rid themselves of him (i.e., the CEO is a bad match and appropriately $MATCH$ equals 0); in support of this argument, none of the appointment announcements state that the CEO is hired to only restructure the firm - it is only mentioned in retrospect in the leaving announcements. An argument for excluding these appointments: despite not being in the appointment announcement, it is possible that the CEO has a mandate to restructure the firm and then resign (i.e., the CEO is a good match and inappropriately $MATCH$ equals 0). To rule out this latter argument, I exclude CEOs who leave early because of finished restructuring (an insider, a grey insider, and four outsiders).[40]

To apply the above criteria, I require the leaving reason for those CEOs who leave within three years. To find this reason, I use a similar search process as that described for the leaving date (see Appendix A.4). This search process is supplemented with the NZX Company Research's Substantial Holders tab, which lists by date significant changes in a firm's ownership.[41] The most common leaving reasons include change in controlling shareholder, "personal reasons", "pursuing other

[39] One of these CEOs leaves because of a firm split (instead of a takeover).

[40] One of these CEOs leaves for another reason. His leaving announcement - but not appointment announcement - states that it "was always envisaged that this would be a two to three year appointment".

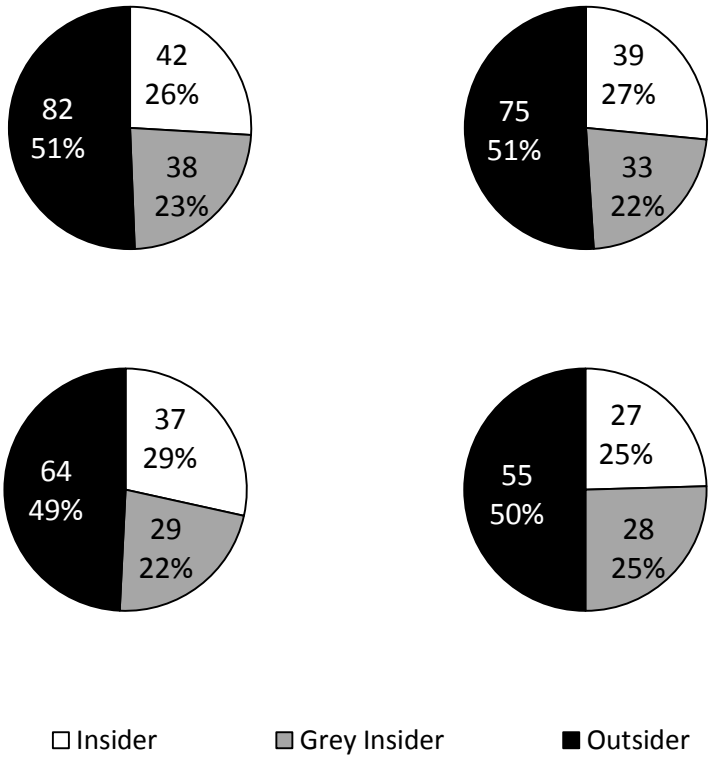
[41] The Substantial Holders tab is accessed as follows: on the NZX Company Research database, input the stock ticker in the top right corner search box and click the 'Search' button; then on the left hand side of the uploaded webpage click 'Substantial Holders'.

interests", "new direction of firm", assigned to another role in firm or parent, firm in receivership, restructuring complete, and no reason given. When no reason is given, it is assumed that the appointment passes the above criteria (seven appointments).

I use three samples: sample 1 passes criteria (i) through (iii), sample 2 passes criteria (i) through (iv), and sample 3 is the common sample. Sample 1 has 147 appointments, sample 2 has 130 appointments, and sample 3 has 110 appointments. Figure 6.1 presents the CEO origin distribution of the three samples. As a reference point, I show the graph of the sample before any restrictions (the top left graph). As shown in the right graphs, the CEO origin distribution does not significantly change for sample 1 or 3. However, there is a noteworthy change for sample 2 - as shown in the bottom left graph, insiders increase their prevalence at the expense of grey insiders and outsiders.

Figure 6.1: Samples of this Chapter's Analysis

Pre restrictions (top left), sample 1 (top right), sample 2 (bottom left), sample 3 (bottom right)



6.3 Tenure Statistics

In this section, I study a relation of $MATCH$ - the number of years the CEO spends in the job. Specifically, I present some summary statistics and graphs around the tenure of NZ CEOs. This section sets the scene for later $MATCH$ analysis, and it also helps fill a gap in our knowledge of local executive practice - there are no statistics, to my knowledge, on NZ CEO tenure.

Tenure statistics are calculated from sample j*, which is created with the following process: start with sample j and then extend sample j's selection criteria to those CEOs who last three or more years (for j equal to 1, 2, and 3). In other words, good match CEOs are excluded when their tenure cannot be measured (criterion (i*)), when they leave because of ill-health (criterion (iii*)), or when they leave because of a takeover or finished restructuring (criterion (iv*)).[42] I create these new samples so that each appointed CEO, regardless of their tenure, is selected with the same respective criteria. This ensures clean tenure statistics. The new samples are smaller than their sample j counterparts: sample 1* excludes an additional 7 appointments (5 using criterion (i*) and 2 using criterion (iii*)); sample 2* excludes an additional 15 appointments (5 using criterion (i*), 2 using criterion (iii*), and 8 using criterion (iv*)); and sample 3* excludes an additional 4 appointments (4 using criterion (i*)). To create these new samples, I collect some additional data: the leaving reasons for those CEOs who last three or more years.

I present the summary statistics of tenure in Table 6.1 and display the distributions of tenure in Figure 6.2. The All rows of Table 6.1 show that CEOs in general have a mean (median) tenure of approximately 4.5 years (3.5 years). These averages are much lower than those observed overseas - for example, over a comparable sample period, Lucier et al. (2007) observe that global CEOs have a mean tenure that is "slightly" less than 7.8 years, and Falato et al. (2009) observe that US CEOs have a median tenure of 7.7 years. This NZ-overseas difference can be partially explained by the following data modification: as mentioned in footnote 42, I prematurely end the tenures of 23 CEOs in samples 1* and 2* and 18 CEOs in sample 3*; this artificially lowers NZ's mean, but does not affect

[42] There is a caveat to criterion (i*). I include those CEOs who remain in the job as at 14 April 2014 even though they have not finished their tenure. I artificially set their leaving dates to 14 April 2014 so that I can calculate their tenures. This is done for 23 CEOs (10 insiders, 3 grey insiders, and 10 outsiders) in samples 1* and 2* and for 18 CEOs in sample 3* (8 insiders, 3 grey insiders, and 7 outsiders). I include these CEOs so that I do not lose too many observations and so that I do not downwards bias the tenure statistics - these CEOs all last longer than average.

NZ's median because all these CEOs last longer than average. Finding a full explanation for NZ's low average tenure is beyond the scope of this thesis but provides an interesting challenge for future research.

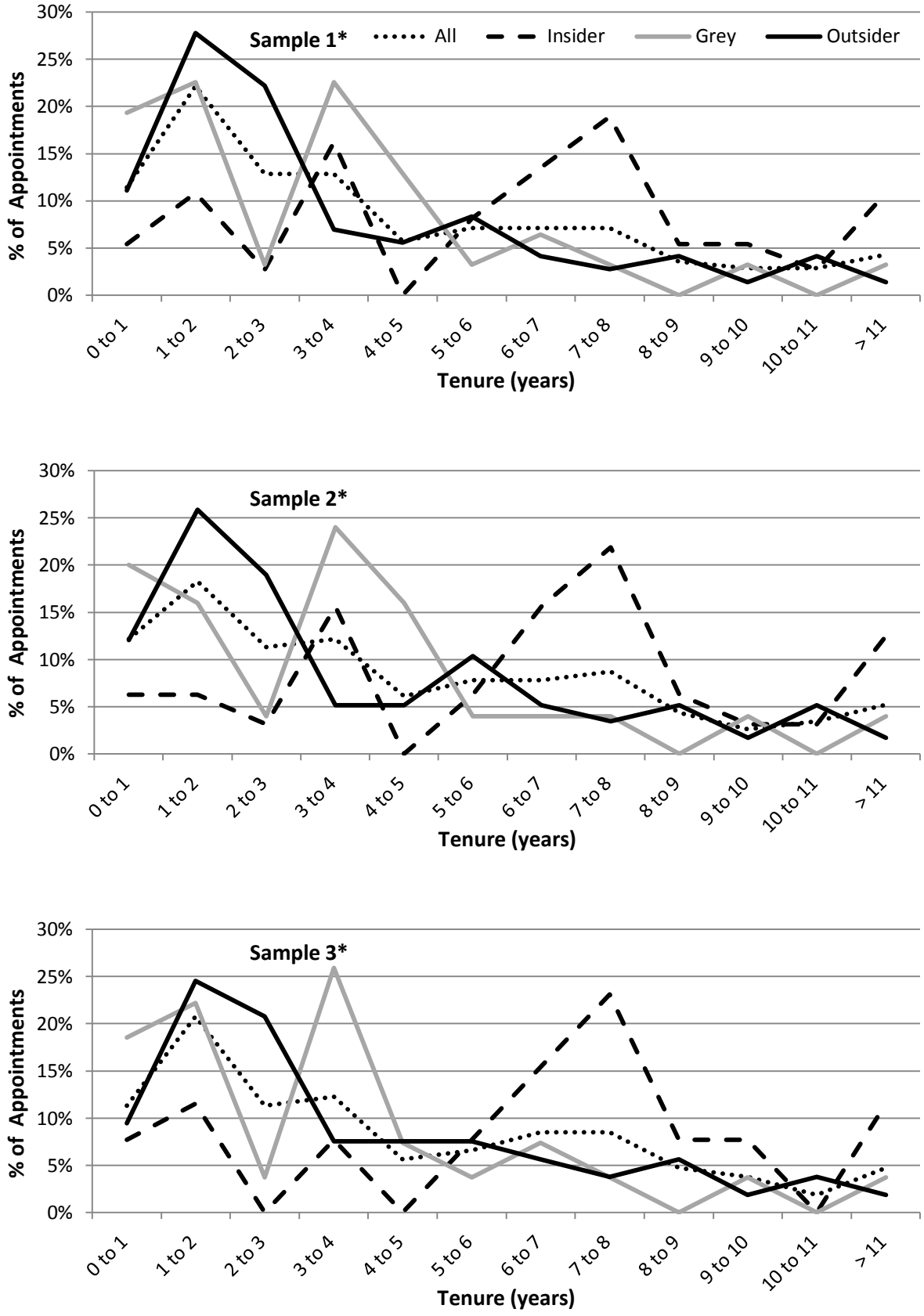
Table 6.1: Summary Statistics of Tenure

Table 6.1 presents the summary statistics of tenure, which is measured in years. Panels A, B, and C show the statistics for samples 1*, 2*, and 3* respectively. The samples are defined at the start of this section and the CEO origins in Appendix A.1.

	# Obs	**Mean**	**Median**	**Stdev**	**Minimum**	**Maximum**
*Panel A: Sample 1**						
All	140	4.3	3.2	3.4	0.5	15.9
Insider	37	6.4	6.6	3.8	0.6	15.9
Grey Insider	31	3.5	3.2	3.0	0.6	14.5
Outsider	72	3.6	2.3	2.9	0.5	14.0
*Panel B: Sample 2**						
All	115	4.7	3.7	3.6	0.5	15.9
Insider	32	6.7	6.9	3.8	0.6	15.9
Grey Insider	25	3.7	3.2	3.2	0.6	14.5
Outsider	58	3.9	2.4	3.2	0.5	14.0
*Panel C: Sample 3**						
All	106	4.5	3.5	3.5	0.5	15.9
Insider	26	6.6	7.0	3.8	0.6	15.9
Grey Insider	27	3.6	3.2	3.2	0.6	14.5
Outsider	53	4.0	2.7	3.1	0.5	14.0

The All rows of Table 6.1 also document a large range: the shortest tenure is 0.5 years and the longest is just under 16 years. In the All plots of Figure 6.2, I show that the general tenure distribution is weighted towards the left - around 45% of appointments last three or less years, and surprisingly the most common tenure is between one and two years. I also discover that the large majority of CEOs leave before the eight year mark (approximately 85%). However, I should mention that 11 CEOs in samples 1* and 2* and 8 CEOs in sample 3* are recorded as leaving between five and eight years even though they remain employed as at 14 April 2014.

Figure 6.2: Distributions of Tenure



I find that insiders easily have the highest mean (around 6.5 years) and median tenures (around 6.8 years). The insider distribution spreads evenly over the whole tenure range with the most common tenure being six to eight years. Grey insiders and outsiders have roughly the same mean (around 3.7 years), but the former has a higher median (around 3.2 versus 2.4 years). The grey insider distribution is weighted towards the left - most grey insiders do not last five years (approximately 80%). Finally, the majority of outsiders are bad matches - around 57% of outsiders last three or less years, whereas only around 18% of insiders and around 43% of grey insiders do likewise. The summary statistics and graphs support the following tenure and $MATCH$ relations: insiders >> greys >= outsiders.

6.4 Bivariate Analysis

Table 6.2 presents the bivariate $MATCH$ results. In columns (1) through (4), I display the percentage of CEOs who are good matches. Column (1) shows that approximately 60% of CEOs in general are good matches.[43] This percentage is lower than that reported in the US - for example, Allgood and Farrell (2003) examine CEO successions between 1981 and 1993 and report a percentage of 79%; and Zhang (2008) examines CEO successions between 1993 and 1998 and reports a percentage of 76%.[44] Unfortunately, these studies use different sample periods to that used in this thesis, so the percentages are not directly comparable. However, when I use my most comparable sample - sample 2's 1992 to 1998 appointments - I calculate a percentage of approximately 62%; the different periods do not account for the NZ-US difference. Columns (2) through (4) show that a lot of insiders (around 83%), most grey insiders (around 60%), and not so many outsiders (around 45%) are good matches. In comparison, Allgood and Farrell find that approximately 81% of insiders and 70% of outsiders are good matches; and Favaro, Karlsson, and Neilson (2012) study CEO successions from the world's 2,500 largest public companies between 2000 and 2011, and find that 84% of insiders and 78% of outsiders are good matches. Outsiders in NZ are much less likely than their overseas counterparts to last three years.

In the final three columns of Table 6.2, I display the differences in percentages and the p-values of the differences. Column (5) shows that insiders are more likely to be good matches than grey

[43] The $MATCH$ figures in this section are slightly different to those in the previous section because the two sections use different samples.

[44] Zhang (2008) explicitly reports a percentage of 73%. However, this percentage increases to 76% when she excludes CEOs who leave because of ill-health or merger.

insiders; the difference is around 23 percentage points and is statistically significant at the 5% level for sample 1 and at the 10% level for samples 2 and 3. In column (6), I document that insiders are also more likely to be good matches than outsiders; the difference is around 38 percentage points and is statistically significant at the 1% level for all samples. Finally, column (7) reveals that grey insiders are more likely to last three years than outsiders, but the difference is statistically insignificant.

Table 6.2: Bivariate Results

Table 6.2 presents the results of the bivariate analysis. In columns (1) through (4), the number is the percentage of good matches (i.e., the percentage of CEOs who last at least three years). In columns (5) through (7), the number outside the parenthesis is the difference in the respective percentages, and the number inside the parentheses is the p-value of a two tailed z-test, testing whether the difference is statistically significant from 0. The CEO origins and samples are defined in Appendices A.1 and A.2 respectively.

	All	**Insider**	**Grey Insider**	**Outsider**	**Difference (2) - (3)**	**Difference (2) - (4)**	**Difference (3) - (4)**
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Sample 1	56%	82%	58%	41%	24% (0.037)	41% (0.000)	17% (0.117)
Sample 2	63%	86%	66%	48%	20% (0.080)	38% (0.000)	18% (0.114)
Sample 3	58%	81%	57%	47%	24% (0.067)	34% (0.003)	10% (0.389)

Overall, the bivariate findings confirm most of the previous section's observations. There is strong support for insiders outperforming outsiders, some support for insiders outperforming grey insiders, and no significant support for grey insiders outperforming outsiders. These findings must be interpreted with caution, however, as simple bivariate comparisons do not control for factors that may be correlated with CEO origin and $MATCH$. In the next section, I control for such factors and isolate the effect of CEO origin on $MATCH$.

6.5 Regression Analysis

I estimate the following regressions:

$$MATCH = a + b(INSIDER) + c(GREY) + d(SIZE) + e(INDUSTRY) + f(PERIOD) + g(PRIOR) + h(EXCESS\_PAY) + \varepsilon \quad (6.1)$$

$$MATCH = a + b(OUTSIDER) + c(GREY) + d(SIZE) + e(INDUSTRY) + f(PERIOD) + g(PRIOR) + h(EXCESS\_PAY) + \varepsilon \quad (6.2)$$

INSIDER, GREY, and OUTSIDER are dummy variables, which are set equal to 1 if the appointment is an insider, grey insider, or outsider respectively, and 0 otherwise; the CEO origin classification is outlined in section 3.2. (6.1) gives the performance of insiders and grey insiders relative to outsiders, whereas (6.2) gives the performance of outsiders and grey insiders relative to insiders; estimating (6.1) and (6.2) ensures that each CEO origin is compared with the other two. I estimate (6.1) and (6.2) with a binary logit model and adjust the standard errors for within firm correlation.

I also estimate (6.1) and (6.2) without EXCESS_PAY to preserve sample sizes. As alluded to in Appendix A.5, the regressions with EXCESS_PAY have significantly smaller sample sizes: sample 1 goes from 147 to 105 appointments, sample 2 goes from 130 to 95, and sample 3 goes from 110 to 78. In these smaller samples the insider proportion increases by approximately 6% and the grey insider and outsider proportions each decrease by approximately 3%.

6.5.1 Control Variables

SIZE measures the appointing firm's size (see section 4.4.1). I control for SIZE because the likelihood of CEO turnover increases with firm size (e.g., Farrell & Whidbee, 2003; Huson et al., 2001; Warner et al., 1988); and because smaller firms have less insider candidates and so are more likely to hire outsider candidates (e.g., Agrawal et al., 2006; Dalton & Kesner, 1983; Lauterbach et al., 1999; Parrino, 1997).

INDUSTRY indicates the appointing firm's industry at the time of the appointment announcement (see section 4.4.1).[45] INDUSTRY is important because the rate of CEO turnover varies between industries (e.g., Favaro et al., 2012; Parrino, 1997). INDUSTRY may also be correlated with CEO origin. Different industries may seek different levels of specific and generic skills and hence favour different CEO origins. Also, Parrino (1997) finds that more competitive industries are more likely to hire outsiders.

As defined in section 5.6.2, PERIOD roughly indicates the year of the CEO's starting date.[46] I control for PERIOD because the rate of CEO turnover (in other countries) has increased over this thesis's sample period (e.g., Kaplan & Minton, 2012; Lucier et al., 2007); and because each CEO origin is more prevalent in different periods (as shown in section 3.3).

PRIOR captures the appointing firm's performance prior to the appointment announcement (see section 4.4.1). As explained in Appendix A.5, I cannot measure PRIOR for one appointment (an outsider) which reduces the size of samples 1 and 2. I expect PRIOR to be positively correlated with $MATCH$: CEOs who inherit struggling (i.e., low PRIOR) firms face more trials - their firms probably have a higher ex-ante probability of going bankrupt and their directors probably demand quick (and perhaps unrealistic) improvements in firm performance. PRIOR is also likely correlated with CEO origin; several studies find that thriving firms hire more insiders and struggling firms hire more outsiders (e.g., Agrawal et al., 2006; Ang & Nagel, 2009; Parrino, 1997).

EXCESS_PAY measures the CEO's initial pay relative to that of other CEOs from similar sized and same industry firms. Specifically, EXCESS_PAY is the residual (i.e., ε) in the following OLS regression:

$$log(PAY) = a + b(SIZE) + c(INDUSTRY) + \varepsilon$$

where SIZE and INDUSTRY are defined above. PAY is the CEO's initial remuneration, which is measured in June 2012 dollars. I take the log of PAY to mitigate the effect of outliers. Appendix A.5 discusses the measurement of PAY and explains why PAY (and hence EXCESS_PAY) cannot be measured for 52 appointments (7 insiders, 17 grey insiders, and 28 outsiders). EXCESS_PAY is important because CEOs may leave early because of underpayment rather than bad match; and

[45] The PROPERTY dummy variable is excluded from the regressions that control for EXCESS_PAY. I do this because these regressions only have one or two appointments from the property industry.

[46] The PERIOD1 dummy variable is excluded from the regressions that control for EXCESS_PAY. I do this because these regressions have no appointments from the 1991 to 1993 period.

because outsiders generally receive more initial remuneration than insiders (e.g., Agrawal et al., 2006; Harris & Helfat, 1997; Murphy & Zabojnik, 2006).

Table 6.3 presents the summary statistics of the control variables. The summary statistics are based on the entire thesis sample rather than the more restricted samples of this chapter. I only show the summary statistics of PAY and EXCESS_PAY because those of SIZE, INDUSTRY, and PRIOR are presented in Table 4.4 and those of PERIOD are presented in section 3.3.[47] The PAY row of Table 6.3 reveals that the mean (median) CEO remuneration is around $700k ($484k). There is a large range in CEO remuneration: one CEO receives a measly $165k while another receives a whopping $3.2m. The PAY row also shows that grey insiders are easily paid the most on average. Outsiders have higher mean PAY than insiders (as expected), but have lower median PAY; a discrepancy that can be explained by the high standard deviation and range of outsider PAY. Finally, the EXCESS_PAY statistics reveal that grey insiders and especially outsiders receive more industry-and-size-adjusted remuneration than insiders.

Table 6.3: Summary Statistics of the Control Variables

Table 6.3 presents the summary statistics of the control variables. The summary statistics are based on the entire thesis sample rather than the more restricted samples of this chapter. The table only shows the summary statistics of PAY and EXCESS_PAY because those of SIZE, INDUSTRY, and PRIOR are presented in Table 4.4 and those of PERIOD are presented in section 3.3. The CEO origins and control variables are defined in Appendix A.1.

	# Obs	Mean	Median	Stdev	Minimum	Maximum
PAY ($000)						
All	110	700	484	563	165	3235
Insiders	35	684	494	476	213	1944
Grey Insiders	21	749	536	456	231	1728
Outsiders	54	691	433	653	165	3235
EXCESS_PAY						
All	110	0.00	-0.02	0.18	-0.37	0.72
Insiders	35	-0.04	-0.04	0.13	-0.24	0.33
Grey Insiders	21	-0.03	0.01	0.19	-0.37	0.31
Outsiders	54	0.04	-0.01	0.19	-0.30	0.72

[47] The PERIOD statistics slightly differ from the section 3.3 statistics. The PERIOD statistics are based on the year of the CEO's starting date, whereas the section 3.3 statistics are based on the year of the CEO's appointment announcement date. The years only differ for 13 appointments so the two sets of statistics are similar enough for discussion purposes.

6.5.2 Regression Results

Before presenting the regression results, I check for multicollinearity. I calculate the correlations between each pair of independent variables and display the results for sample 1 (with EXCESS_PAY) in Table 6.4; I do not display the correlation tables for the other samples (with or without EXCESS_PAY) as they are similar to Table 6.4. Table 6.4 shows that the independent variables are not highly correlated with each other, so multicollinearity is not a problem.[48] In fact, the correlations are all smaller than |0.6| except those among the CEO origin variables.

Table 6.5 summarises the regression results. In columns (2) through (4), I present the marginal effects and p-values of the INSIDER, GREY, and OUTSIDER variables.[49] Column (2) confirms that insiders are more likely to be good matches than outsiders: the difference is around 37 percentage points and is statistically significant at the 1% or 5% level depending on the sample. This finding partially supports those of comparable studies: Zhang (2008) finds that insiders are less likely to be dismissed within their first three years, while Allgood and Farrell (2003) find that insiders are as likely as outsiders to be good matches. Column (3) reveals no significant differences between grey insiders and outsiders. In Column (4), I show that insiders are more likely to be good matches than grey insiders. In the regressions without EXCESS_PAY, the difference is around 35 percentage points and is statistically significant at the 5% level. In the regressions with EXCESS_PAY, however, the difference decreases to around 22 percentage points and is only significant at the 10% level for sample 2.

Table 6.6 presents the full regression outputs of equation (6.1); those of equation (6.2) are omitted as they do not add anything new except the performance of grey insiders relative to outsiders which is documented in Table 6.5. SIZE's coefficients are consistently positive, which is a surprise. However, they are only statistically significant for sample 2 - a marginal effect of around 12%. In the regressions with EXCESS_PAY, none of the INDUSTRY coefficients are statistically significant for more than one sample. Without EXCESS_PAY, primary has a marginal effect of around -35%, which is statistically significant for samples 1 and 2; and goods has a marginal effect

[48] As mentioned earlier, PROPERTY and PERIOD1 are excluded from regressions that control for EXCESS_PAY. Hence, Table 17 does not show the correlations of PROPERTY and PERIOD1; but I can report that their correlations are also low enough.

[49] The p-values are from the logit regression outputs rather than the marginal effects outputs.

Table 6.4: Correlations between Independent Variables

Table 6.4 shows the correlations between the independent variables of sample 1 (with EXCESS_PAY). The correlation tables for the other samples (with and without EXCESS_PAY) are similar to Table 6.4. The independent variables and samples are defined in Appendices A.1 and A.2 respectively.

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**
1. INSIDER	1.00													
2. GREY	-0.34	1.00												
3. OUTSIDER	-0.69	-0.45	1.00											
4. SIZE	0.09	0.22	-0.25	1.00										
5. PRIMARY	0.06	0.01	-0.07	0.07	1.00									
6. ENERGY	-0.13	0.22	-0.05	0.23	-0.21	1.00								
7. GOODS	0.02	-0.14	0.08	-0.30	-0.17	-0.10	1.00							
8. SERVICES	0.07	-0.12	0.02	0.08	-0.57	-0.35	-0.28	1.00						
9. PERIOD2	-0.03	0.07	-0.03	-0.03	0.02	-0.10	-0.08	0.12	1.00					
10. PERIOD3	0.06	-0.05	-0.01	0.02	0.08	-0.06	-0.02	-0.02	-0.11	1.00				
11. PERIOD4	-0.09	0.34	-0.18	0.23	-0.11	0.21	-0.05	0.06	-0.13	-0.20	1.00			
12. PERIOD5	0.17	-0.15	-0.05	-0.03	-0.07	-0.13	0.18	-0.01	-0.15	-0.23	-0.27	1.00		
13. PRIOR	0.08	-0.06	-0.03	0.07	0.05	0.06	0.02	-0.01	0.07	-0.04	-0.02	-0.01	1.00	
14. EXCESS_PAY	-0.16	-0.10	0.23	0.00	-0.01	0.00	0.01	0.00	-0.24	-0.11	0.01	0.01	-0.01	1.00

of around -55%, which is statistically significant for all samples. The PERIOD, PRIOR, and EXCESS_PAY coefficients have mixed signs and cannot be statistically distinguished from 0. The regressions with EXCESS_PAY have an average sensitivity and specificity of around 88% and 46% respectively; and the regressions without EXCESS_PAY have averages of around 75% and 57% respectively.

Table 6.5: Summarised Regression Results

Table 6.5 summarises the results of the regression analysis. Panels A and B show the results with and without the EXCESS_PAY control respectively. Equations (6.1) and (6.2) are estimated with a binary logit model and the standard errors are adjusted for within firm correlation. The dependent variable is $MATCH$ (the likelihood of the CEO lasting at least three years). The independent variables of interest are INSIDER, GREY, and OUTSIDER. The control variables are SIZE, INDUSTRY, PERIOD, PRIOR, and EXCESS_PAY. In columns (2) through (4), the number outside the parenthesis is the marginal effect of INSIDER in equation (6.1), GREY in equation (6.1), and GREY in equation (6.2) respectively; and the number inside the parentheses is the p-value of a two tailed t-test, checking whether the *logit coefficient* is statistically significant from 0 (i.e., the p-value is from the logit regression output rather than the marginal effects output). The variables and samples are defined in Appendices A.1 and A.2 respectively.

	# Obs	**INSIDER relative to OUTSIDER**	**GREY relative to OUTSIDER**	**GREY relative to INSIDER**
	(1)	(2)	(3)	(4)
Panel A: With EXCESS_PAY				
Sample 1	104	38.66% (0.003)	19.54% (0.130)	-19.11% (0.244)
Sample 2	94	33.51% (0.002)	9.97% (0.405)	-23.53% (0.099)
Sample 3	78	41.93% (0.041)	18.36% (0.146)	-23.57% (0.252)
Panel B: Without EXCESS_PAY				
Sample 1	146	38.62% (0.001)	4.87% (0.656)	-33.75% (0.027)
Sample 2	129	38.12% (0.001)	4.05% (0.727)	-34.07% (0.032)
Sample 3	110	38.01% (0.010)	-0.33% (0.978)	-38.35% (0.025)

Overall, the regression analysis confirms the bivariate findings: there is strong support for insiders outperforming outsiders, some support for insiders outperforming grey insiders, and no significant

support for grey insiders outperforming outsiders. These findings support those of the previous chapter: insiders are generally the best medium term performers.

Table 6.6: Full Regression Results

Table 6.6 presents the full regression outputs of equation (6.1); those of equation (6.2) are omitted as they do not add anything new except the performance of grey insiders relative to outsiders which is documented in Table 6.5. Panels A and B show the regression outputs with and without EXCESS_PAY respectively. Equation (6.1) is estimated with a binary logit model and the standard errors are adjusted for within firm correlation. Equation (6.1)'s dependent variable is $MATCH$ (the likelihood of the CEO lasting at least three years). The independent variables of interest are INSIDER and GREY. The control variables are SIZE, INDUSTRY (five dummy variables), PERIOD (five dummy variables), and EXCESS_PAY. The number outside the parenthesis is the marginal effect estimate and the number inside the parentheses is the p-value of a two tailed t-test, checking whether the *logit coefficient* is statistically significant from 0 (i.e., the p-value is from the logit regression output rather than the marginal effects output). The intercept is not shown because it does not have a marginal effect. The variables and samples are defined in Appendices A.1 and A.2 respectively.

	Sample 1	**Sample 2**	**Sample 3**
Panel A: With EXCESS_PAY			
INSIDER	38.66% (0.003)	33.51% (0.002)	41.93% (0.041)
GREY	19.54% (0.130)	9.97% (0.405)	18.36% (0.146)
SIZE	7.03% (0.256)	13.07% (0.012)	1.78% (0.798)
PRIMARY	-20.26% (0.256)	-33.57% (0.077)	-18.84% (0.401)
ENERGY	-11.80% (0.585)	-26.26% (0.205)	-27.63% (0.261)
GOODS	-7.22% (0.727)	-22.33% (0.420)	-19.89% (0.401)
SERVICES	-10.96% (0.540)	-27.73% (0.143)	-15.61% (0.488)
PERIOD2	5.82% (0.725)	9.90% (0.654)	11.73% (0.598)
PERIOD3	5.88% (0.675)	14.14% (0.241)	-1.35% (0.925)
PERIOD4	-7.29% (0.564)	-5.98% (0.608)	-11.73% (0.379)
PERIOD5	1.88% (0.883)	14.65% (0.224)	-0.59% (0.973)
PRIOR	-4.86% (0.701)	-6.38% (0.506)	-10.59% (0.458)
EXCESS_PAY	-3.41% (0.890)	-24.63% (0.223)	5.84% (0.821)
# Obs	104	94	78
Sensitivity	84%	90%	91%
Specificity	57%	44%	38%

Panel B: Without EXCESS_PAY			
INSIDER	38.62% (0.001)	38.12% (0.001)	38.01% (0.010)
GREY	4.87% (0.656)	4.05% (0.727)	-0.33% (0.978)
SIZE	7.86% (0.172)	12.12% (0.018)	1.71% (0.801)
PRIMARY	-39.38% (0.051)	-33.26% (0.085)	-40.86% (0.105)
ENERGY	-33.54% (0.116)	-32.27% (0.106)	-50.28% (0.057)
GOODS	-49.51% (0.027)	-48.17% (0.040)	-66.79% (0.009)
PROPERTY	-33.48% (0.253)	-16.45% (0.603)	-32.29% (0.315)
SERVICES	-33.01% (0.081)	-30.29% (0.101)	-37.82% (0.117)
PERIOD1	15.92% (0.470)	31.09% (0.180)	14.92% (0.526)
PERIOD2	-3.54% (0.807)	-4.14% (0.779)	-1.74% (0.920)
PERIOD3	1.91% (0.878)	7.30% (0.581)	2.21% (0.872)
PERIOD4	8.07% (0.442)	5.36% (0.634)	8.71% (0.488)
PERIOD5	4.28% (0.723)	13.93% (0.271)	-0.99% (0.944)
PRIOR	8.07% (0.489)	4.39% (0.714)	6.62% (0.621)
# Obs	146	129	110
Sensitivity	73%	83%	70%
Specificity	68%	48%	54%

7 Discussion and Conclusion

This thesis examines the relationship between CEO origin and performance consequences in a NZ setting. The NZ setting is unique because previous research on this topic is from the US and in one instance the UK; and the NZ setting is intriguing because it has four important institutional differences: NZ directors hire outsiders much more frequently than their US and UK counterparts; NZ has no discernible trend in the frequency of outsider appointments over time, whereas the US has a marked upward trend; average CEO tenure in NZ is much shorter than that observed in the US or globally; and CEO succession occurs in relatively small firms. These four differences suggest that the NZ CEO market has some unique dynamics and perhaps unique performance consequences. This thesis fills a gap in our knowledge of executive and director practice in NZ and contributes to the CEO origin debate by analysing a new setting.

Using a hand collected sample of 162 CEO appointments from NZ firms between 1991 and 2008, I find some significant performance differences between insiders and outsiders. Outsiders deliver higher abnormal returns around the appointment announcement: the 1-day and the 3-day differentials are approximately 1.2% and 1.7% respectively. In contrast, insiders create more shareholder wealth during their first three years in charge: insiders increase the appointing firm's MTB ratio by approximately 27 percentage points more than outsiders. I also find that insiders are around 37 percentage points more likely to last at least three years in the job. The main difference between these findings and those from the US and UK is that insiders easily outperform outsiders in the medium term. Also, I discover an intuitive finding for grey insiders: grey insiders by definition possess a blend of insider and outsider attributes and perform between insiders and outsiders on all three performance measures. These findings are robust to various controls and subsamples.

The above findings raise an interesting question: why do directors and investors often prefer outsiders initially when outsiders generally underperform in the medium term? A possible explanation is that the underperformance of outsiders is spurious and results from an omitted variable bias. There may be unobservable factors that increase the chance of low performance and outsider appointment. For example, selection bias may be present: directors may systematically select outsiders when they know that firm prospects are poor - poorer than perhaps investors realise. The medium term performance of outsiders may reflect not only their own actions but also their firm's unobservable poor prospects; the performance of outsiders may be biased downwards. I attempt to control for selection bias in section 5.6 but only have limited success.

Another possible omitted variable story involves an unobservable risk factor. An unobservable risk factor may explain why outsiders have higher appointment announcement abnormal returns and yet lower changes in the MTB ratio. For example, outsider appointments may lower firm systematic risk along some unobservable dimension, which leads to a lower cost of capital and hence a higher contemporaneous share price and a lower long run expected return. In other words, the medium term performance of outsiders may reflect not only their own actions but also their low unobservable risk and low expected return; the performance of outsiders may be biased downwards.

A second possible explanation is that directors irrationally favour outsider candidates. Khurana (2002a) provides support for this explanation. After analysing the hiring and firing of CEOs at 850 of America's largest companies between 1978 and 1999, and after conducting extensive interviews with CEOs, corporate board members, and consultants at executive search firms, Khurana concludes that directors systematically overestimate the ability of outsider candidates. Specifically, he argues that directors are irrationally attracted to "superstars" - outsider candidates who are charismatic and come from high performing and high stature companies.

According to Khurana (2002a), this irrational attraction stems from three causes. First, directors overly attribute outcomes to leaders: superstars are given too much credit for their firm's high performance, whereas other performance factors such as luck, economic environment, or industry conditions are not given enough credit by directors. Second, directors incorrectly assume that an executive's success at one firm will readily transfer to their firm; directors don't fully appreciate that different firms often require different skills. Third, boards want to appoint a CEO with as much star power as possible because a high profile, high status appointment will most likely inspire public confidence in the firm and immediately boost share prices.

Even though a superstar's fame and personality may initially impress analysts and business media, Khurana (2002a) argues that superstar appointments generally disappoint in the long run. The irrational quest for superstars causes directors to overlook superior candidates, whose experience and abilities are better suited to the appointing firm. Ultimately, the mismatch between the superstar's skills and the firm's needs results in poor performance. In summary, Khurana (2002b) states that, "[t]ime and again over the past 20 years, corporate boards have seen the superstars they

had hoped would be saviors turn into black holes that sucked the energy and purpose out of their organizations" (p.66).

Investigating the validity of the above explanations is beyond the scope of this thesis but provides an interesting challenge for future research. This investigation may shed more light on CEO origin and CEO performance within NZ firms.

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A Appendices

A.1 Variable Definitions

Variable	Definition
INSIDER	INSIDER is a dummy variable that equals 1 if the appointment is an insider and 0 otherwise. Immediately prior to the appointment, insiders are executives of the appointing firm and have worked at the firm for at least a year.
GREY	GREY is a dummy variable that equals 1 if the appointment is a grey insider and 0 otherwise. Grey insiders are any of the following: • Immediately prior to the appointment, executives of the appointing firm who have worked at the firm for less than a year (i.e., recently hired executives). • Immediately prior to the appointment, executives of another firm who have worked at the appointing firm at some stage during the five years leading up to the appointment (i.e., former executives). • Non-executive directors of the appointing firm who served at some stage during the five years leading up to the appointment. • Executives or non-executive directors of a major shareholder of the appointing firm. These candidates must have held these positions immediately prior to the appointment. A major shareholder is defined as owning at least 40% of the appointing firm at the time of the appointment announcement.
OUTSIDER	OUTSIDER is a dummy variable that equals 1 if the appointment is an outsider and 0 otherwise. Outsiders have no obvious and/or recent connection with the appointing firm.
AR	AR is the winsorised appointment announcement abnormal return.
SIZE	SIZE measures the appointing firm's size. SIZE is equal to log(ASSET), where ASSET is the book value of the firm's total assets measured at the CEO's starting date and then converted to June 2012 dollars.
INDUSTRY	INDUSTRY indicates the appointing firm's industry at the time of the appointment announcement. INDUSTRY consists of five dummy variables that are based on the six broad NZX industry classifications: energy, goods, primary, property, services, and investment (the excluded dummy).
PRIOR	PRIOR measures the appointing firm's performance prior to the appointment announcement. PRIOR is the firm's stock return minus the NZX All's stock return over the 12 months prior to the appointment announcement.

$\Delta\, MTB$	$\Delta\, MTB$ is the 3-year change in the appointing firm's market-to-book ratio and is measured as: $$\Delta\, MTB = \frac{MTB_{end} - MTB_{initial}}{MTB_{initial}}$$ where $$MTB_t = \frac{Market\ Capitalisation_t}{Book\ Equity_t}, \quad for\ t = initial, end$$ where $Market\ Capitalisation_t$ and $Book\ Equity_t$ are the firm's time *t* market value of equity and book value of equity respectively.
EXCESS_MTB	EXCESS_MTB measures the appointing firm's initial MTB ratio relative to those of other firms in the same industry. EXCESS_MTB is the residual (i.e., ε) in the following OLS regression: $$MTB_{initial} = a + b(INDUSTRY) + \varepsilon$$ where $MTB_{initial}$ and INDUSTRY are defined above.
MARKET	MARKET measures the share market's return over the CEO's performance period. MARKET is the real return of the NZX All Index (i.e., NZX All return minus CPI percentage change) measured over the period of $\Delta\, MTB$.
REGULATED	REGULATED is a dummy variable that equals 1 if the appointing firm is regulated at the time of appointment announcement, and 0 otherwise.
PERIOD	PERIOD roughly indicates the year of the CEO's starting date. It consists of five dummy variables that are based on 3-year blocks: 1991 to 1993 (PERIOD1), 1994 to 1996 (PERIOD2), 1997 to 1999 (PERIOD3), 2000 to 2002 (PERIOD4), 2003 to 2005 (PERIOD5), and 2006 to 2008 (PERIOD6, the excluded dummy).
BOARD_DEP	BOARD_DEP measures the dependence of the appointing firm's board of directors. BOARD_DEP is the proportion of directors who are firm executives at the time of the CEO appointment announcement.
AB_RETURN	AB_RETURN is the winsorised 1-day appointment announcement abnormal return.
$MATCH$	$MATCH$ measures the likelihood that the CEO will last at least three years in the job, and is defined as follows: $$MATCH = \begin{cases} 1 & if\ (leaving\ date - starting\ date) \geq 3\ years \\ 0 & if\ (leaving\ date - starting\ date) < 3\ years \end{cases}$$ where 1 and 0 indicate good and bad matches respectively. The starting and leaving dates are the appointed CEO's first and last day in the job respectively.
EXCESS_PAY	EXCESS_PAY measures the CEO's initial pay relative to that of other CEOs from similar sized and same industry firms. EXCESS_PAY is the residual (i.e., ε) in the following OLS regression: $$log(PAY) = a + b(SIZE) + c(INDSUTRY) + \varepsilon$$ where SIZE and INDUSTRY are defined above, and PAY is the CEO's initial remuneration measured in June 2012 dollars.

A.2 Sample Definitions

Samples of Chapter 4: Appointment Announcement Abnormal Returns

Sample	Definition
Sample 1	Appointments in this sample pass the following criteria: (i) There must be a trade in the event window. A trade must occur on day 0 or day +1 in the 3-day window. (ii) The stock must trade at least 30 times between day -210 and day -11. (iii) There must be no 'obvious' confounding announcements in the event window. 'Obvious' includes the following announcements: earnings results or updates, significant project updates, mergers, or movements in significant substantial shareholders.
Sample 2	Appointments in this sample pass the above (i) through (iii) and the following criterion: (iv) There must be no 'perhaps' confounding announcements in the event window. 'Perhaps' includes the following announcements: CEO departures or directorship changes.
Sample 3	Sample 3 is the common sample - it is used in the analysis of all three performance measures. Sample 3 passes the above (i) through (iii), (i) of Chapter 5 (see below), and (i) through (iii) of Chapter 6 (see below).

Samples of Chapter 5: Change in the Market-to-Book Ratio

Sample	Definition
Sample 1	Appointments in this sample pass the following criterion: (i) There must be sufficient data to measure $\Delta\, MTB$.
Sample 2	Appointments in this sample pass the above (i) and the following criterion: (ii) The MTB_{end} is not measured early because of a takeover.
Sample 3	As explained in the above table, sample 3 is the common sample. I use the common sample of the 1-day (rather than the 3-day) event window because it is slightly larger.

Samples of Chapter 6: Lasting at Least Three Years

Sample	Definition
Sample 1	Appointments in this sample pass the following criteria: (i) There must be sufficient information to measure $MATCH$. (ii) The initial plan must be to employ the CEO for at least three years. The appointment announcement must not state anything to the contrary. (iii) The reason for leaving within three years must be non-health related.
Sample 2	Appointments in this sample pass the above (i) through (iii) and the following criterion: (iv) The reason for leaving within three years must be linked to the CEO; the CEO must not leave within three years because of a takeover or finished restructuring.
Sample 3	As explained in the above table, sample 3 is the common sample. I use the common sample of the 1-day (rather than the 3-day) event window because it is slightly larger.

A.3 Data Collection for Abnormal Returns

For each appointment, I perform the following data collection process:

(i) Within the Adjusted Share Prices Tool section of the NZX Company Research database, I input the appointing firm's stock ticker, leave the date inputs as they are, and click 'Go'.[50] A spreadsheet is downloaded which contains a time series of the firm's share price and other trading statistics. The Gross Adjusted Price column - which contains the firm's daily closing share price adjusted for corporate actions and dividends - is copied for days -210 to +10.[51] The Volume column is also copied for these dates. The price and volume data are pasted into my spreadsheet.

(ii) This step is done once (rather than for each appointment). On the NZX Company Research database, I go to Indices, then Historical Values, and then NZX All. I click 'All' under Quick Select, and this gives a time series of NZX All statistics over all available dates. The Date column and the Gross Index Close column - which contains the index's daily closing price adjusted for dividends - are copied for all dates. The date and price data are pasted into my spreadsheet.

(iii) From the NZX All price column in my spreadsheet, I copy the days -210 to +10 for the respective appointment. This data is pasted next to the firm's share price and volume data.

The following process, done for each appointment, converts the copied data into a trade-to-trade format:

(i) Trade-to-trade returns only use share prices from days with positive volume. Therefore, I delete firm share prices that are associated with zero volume. Specifically, these cells in Excel are left blank rather than completely deleted because I need to know (in the below step) when no trades occurred. The NZX All prices are blanked out for the same days.

(ii) I create a variable n_t which is defined as follows: 1 plus the number of zero volume trading days between t and the previous positive volume day. For example, the n_t for Thursday is 3 if the stock traded on Monday and Thursday but not on Tuesday or Wednesday. For days

[50] This step only works with the stock's most recent ticker, which is found using the following process: (a) on the NZX Company Research database, input the old stock ticker in the top right-hand corner search box and click 'Search'; (b) on the left-hand side of the uploaded webpage, click 'Events & Documents'. If this process fails I use Google.

[51] A few firms list on the NZX within the -210 days, so I cannot copy their data for the whole period. Instead, I copy their data from their listing date to +10.

when the share price cell is blank, the corresponding n_t cell is also left blank. After completing this step, I have a column of n_t values for each appointment, containing matching gaps with the firm and NZX All price columns.

(iii) Finally, I remove the gaps in the firm's share price, NZX All price, and n_t columns. The columns have matching gaps, so when the gaps are removed the data stays aligned for a given day. The gaps are removed to make life easier when regressions are run. The data is now ready to be analysed.

A.4 Data Collection for Change in the Market-to-Book Ratio

For each appointment, I perform the following data collection process:

(i) As alluded to in section 5.1, I need to answer three questions:

(a) Is the CEO still in the job after three years? To answer this question, I read the annual report of the CEO's fourth year. If the CEO is in this annual report, then there is no need to search for the CEO's leaving date. Otherwise, the leaving date can be found using the firm's NZX announcements and annual reports. These sources sometimes fail so I also use Google and Factiva. When the leaving date cannot be found it is set equal to the replacement CEO's starting date. The above procedure is also used to find the CEO's leaving announcement. When the leaving announcement date cannot be found it is set equal to the earlier of the following: the CEO's leaving date or the replacement CEO's appointment announcement.

(b) Is the firm still listed on the NZX after three years? I answer this question by reading the firm's most recent NZX announcements. These announcements also give the firm's reason for delisting.

(c) What is the CEO's starting date? This question is answered by reading the CEO's appointment announcement and the firm's annual report of the appointment year. When the starting date cannot be found it is set equal to the CEO's appointment announcement date.

(ii) The $Book\ Equity_{j,t}$ data is collected as follows. On the NZX Company Research database, I input the stock ticker in the top right-hand corner search box and click 'Search'. On the left-hand side of the uploaded webpage, I click 'Annual Report Financials', which gives the firm's historical financial statements. The SHAREHOLDERS' EQUITY row contains the relevant book equity figures.[52,53] Two figures are copied for each of $Book\ Equity_{j,initial}$ and $Book\ Equity_{j,end}$, so that weighted averages can be taken. Sometimes this process fails, so I also use annual reports.

(iii) The $Market\ Capitalisation_{j,t}$ data is collected as follows. On the NZX Company Research database, I go to the Adjusted Share Price Tool section, input the stock ticker, leave the date range, and click 'Go'. A spreadsheet is downloaded, containing a time series of the firm's

[52] These figures exclude convertible securities, subordinated debt, and minority interests.

[53] One firm (two appointments) reports its book value figures in US dollars (USD), so I convert these figures to NZ dollars (NZD) using the USD / NZD exchange rate at the respective balance dates. Exchange rate data is available from http://www.rbnz.govt.nz/statistics/tables/b1/.

share price, market capitalisation, and other trading statistics. The Market Capitalisation column - which contains a time series of the firm's daily closing market capitalisations - contains the required figures for $Market\ Capitalisation_{j,initial}$ and $Market\ Capitalisation_{j,end}$. After copying these figures into my spreadsheet, I divide them by 1000 so that their units are consistent with those of $Book\ Equity_{j,t}$.

A.5 Data Collection for Control Variables

SIZE's data is collected as follows: (a) on the NZX Company Research database, input the stock ticker in the top right-hand corner search box and click 'Search'; (b) on the left-hand side of the uploaded webpage, click 'Annual Report Financials'; and (c) scroll down to the TOTAL ASSETS row and copy the two required figures for the weighted average. Sometimes this process fails, so I also use annual reports.

INDUSTRY's data is collected as follows: (a) on the NZX Company Research database, input the stock ticker in the top right-hand corner search box and click 'Search'; (b) on the left-hand side of the uploaded webpage, click 'Directory'; and (c) note the firm's NZX Group Sector. The NZX Group Sector gives the firm's industry at present or at the firm's delisting date, whereas INDUSTRY measures the firm's industry at the appointment announcement date; so when it is unclear whether the firm's industry has changed or not, I read the firm's annual report of the appointment year. Sometimes (a) through (c) fails, so I rely solely on annual reports to infer the firm's industry. This manual classification is done for firms with no NZX Group Sector information, for firms listed on the NZAX because such firms are not classified under the six broad NZX industry groups, and for a firm that has an Overseas (No Index) classification despite being domiciled in NZ.

PRIOR uses share prices and the collection of this data is described in Appendix A.3. For seven appointments, I cannot measure the whole 12-month return because the firms list within this time. For six of these appointments, I calculate PRIOR over a reduced period (at least 50 trading days). For the remaining appointment (an outsider), I do not calculate PRIOR as I deem the period too short (less than 20 trading days).

EXCESS_MTB uses $MTB_{j,initial}$ and INDUSTRY and the data collection for these variables is described above. I cannot measure EXCESS_MTB for one appointment (an outsider) because its $Market\ Capitalisation_{initial}$ data is missing.

MARKET uses share prices and the collection of this data is described in Appendix A.3. MARKET also uses CPI data, which is available from http://www.rbnz.govt.nz/statistics/tables/m1/.

REGULATED is created by Glenn Boyle.

PERIOD uses the CEO's start date and the collection of this date is described in Appendix A.4.

BOARD_DEP is from Sarah Hargreaves' Honours Dissertation. Hargreaves (2013) explains the data collection process as follows:

> *To determine the number of insider directors I look at the appointing firm's annual report for the period in which a CEO announcement takes place. In most recently published annual reports companies state whether directors are executive or non-executive directors. If this information is not provided I reconcile the list of directors provided in the company directory against the list of company executives; insider directors are those who appear in both lists. (p.16)*

AB_RETURN uses share prices and the collection of this data is described in Appendix A.3.

EXCESS_PAY uses SIZE and INDUSTRY and the data collection for these variables is described above. EXCESS_PAY also uses PAY and the definition and data collection for this variable are described below.

PAY has the following characteristics:

- PAY is the CEO's initial remuneration. Ideally, I use the CEO's first year remuneration so that PAY is not endogenous with CEO performance. However, as I explain later, sometimes I am forced to use the CEO's second year remuneration.
- PAY includes cash remuneration (i.e., cash salary, cash bonus, and valued benefits), but excludes equity remuneration (i.e., shares and options).[54] I exclude equity remuneration so that the measurement of PAY is consistent across all CEOs; sometimes the CEO's equity remuneration cannot be measured because firms do not state its dollar amount.
- PAY is measured in real dollars. The CEO's remuneration is converted to June 2012 dollars using the CPI.

Within an annual report there are two sources of PAY information: Directors' Remuneration and Employees' Remuneration. The Directors' Remuneration source gives the exact remuneration of the

[54] One CEO is paid secondment fees which I deem to be cash remuneration. Two CEOs are paid in USD so I convert their remunerations to NZD.

directors of the firm; and the Employees' Remuneration source lists the number of employees whose remuneration lies in $10,000 bands over $100,000 (i.e., the number of employees whose remuneration lies between $100,000 and $110,000, between NZ$110,000 and NZ$120,000, and so on); and the Employees' Remuneration source generally does not count executive directors. Using these sources, I collect PAY's data as follows:

(i) If the CEO is a director, then I use the Directors' Remuneration source. The year of the annual report is chosen using the following criteria:

   a. If the CEO becomes a director upon CEO appointment, then I use the annual report of the appointment year. The stated remuneration is often for a fraction of a year, so it is scaled up to an annual amount.[55]

   b. If the CEO is a director before becoming CEO, then I use the annual report of the CEO's first *full* financial year in charge. For example, if the CEO starts in March 2004 and the firm's balance date is June 2004, then I use the June 2005 annual report. Even though this choice of annual report does not strictly measure the CEO's initial remuneration and hence may be slightly endogenous with CEO performance, it isolates the CEO's remuneration from his previous directorship remuneration.

(ii) If the CEO is not a director, then I use the Employees' Remuneration source.[56] Following Andjelkovic, Boyle, and McNoe (2002), I use the middle of the highest salary band as a proxy for the CEO's remuneration. For example, if the highest salary band is $450,000 to $460,000, then I assume the CEO's remuneration is $455,000.[57] I use the annual report of the CEO's first *full* financial year. Even though this choice of annual report does not strictly measure the CEO's initial remuneration, it isolates the CEO's remuneration from the previous CEO's remuneration. It also ensures that a whole year of remuneration is captured by the salary band.

Unfortunately, PAY data is not available in the following circumstances:

[55] I annualise with the following formula: $\frac{annual\ report\ amount}{(days\ between\ balance\ date\ and\ starting\ date)/365}$.

[56] In recent years, some firms disclose their CEO's exact remuneration even though the CEO is not a director. For these cases, I use the exact disclosed amount rather than the Employees' Remuneration source.

[57] For two appointments, I use the second highest salary band rather than the highest. For the first appointment, the highest salary band has one employee in it and he receives severance pay. This employee cannot be the CEO as the CEO is still at the firm. For the second appointment, the highest salary band has one employee in it and he is an executive director. This employee cannot be the CEO as the CEO is not a director.

- As explained above, in some cases the CEO needs to be in charge for a *full* financial year. This requirement is not met for 15 appointments (2 insiders, a grey insider, and 12 outsiders).
- Sometimes a CEO's remuneration is not given in an annual report or is given ambiguously. Property trusts do not seem to disclose CEO remuneration, while other firms just state that remuneration is paid through a management company, or there is an arrangement with the parent, or x employees earned at least $y. I can sometimes get around this ambiguity by looking at subsequent annual reports with clearer figures. This lack of data affects 13 more appointments (2 insiders, 6 grey insiders, and 5 outsiders).
- If the appointment date was pre 1996, then CEO remuneration data is generally unavailable.[58] Firms have only been required to disclose director and employee remuneration since 1 July 1997, and most firms did not voluntarily disclose before this date. This lack of data affects 12 more appointments (an insider, 3 grey insiders, and 8 outsiders).
- There is no annual report as the firm is subsequently delisted.[59] This situation affects 11 appointments (2 insiders, 7 grey insiders, and 2 outsiders).
- As explained above, cash and equity remuneration needs to be broken out. This does not happen for one appointment (an outsider).

Overall, PAY data is not available for 52 appointments (7 insiders, 17 grey insiders, and 28 outsiders).

[58] Only two pre 1996 appointments have CEO remuneration data.

[59] For one appointment, I can find the relevant annual report on the NZ Companies Office website.